Fig. 1

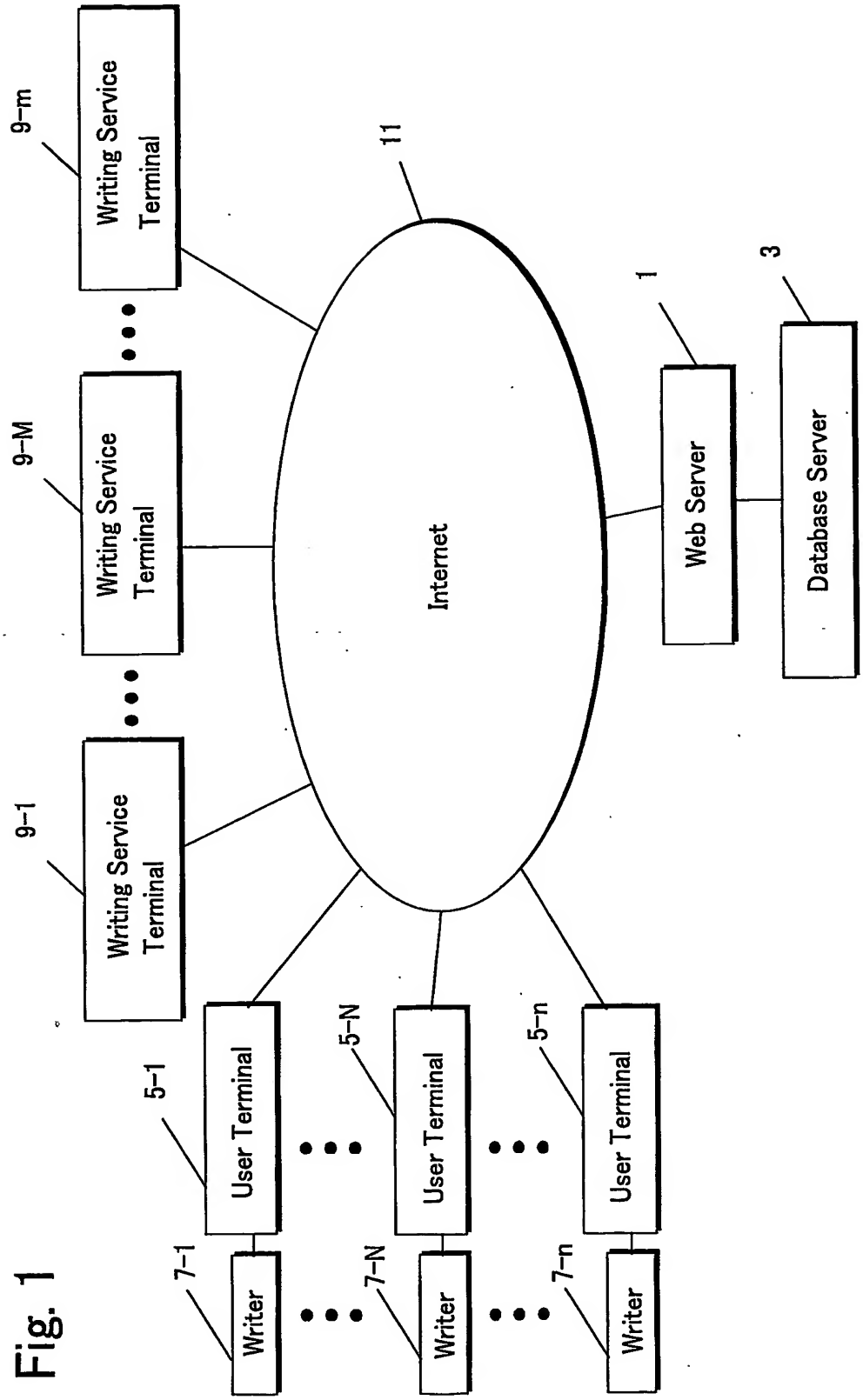

Writing Service Terminal
9-m
Writing Service Terminal
9-M
Writing Service Terminal
9-1
11
Internet
1
Web Server
3
Database Server
User Terminal
5-1
User Terminal
5-N
User Terminal
5-n
Writer
7-1
Writer
7-N
Writer
7-n

Fig. 2

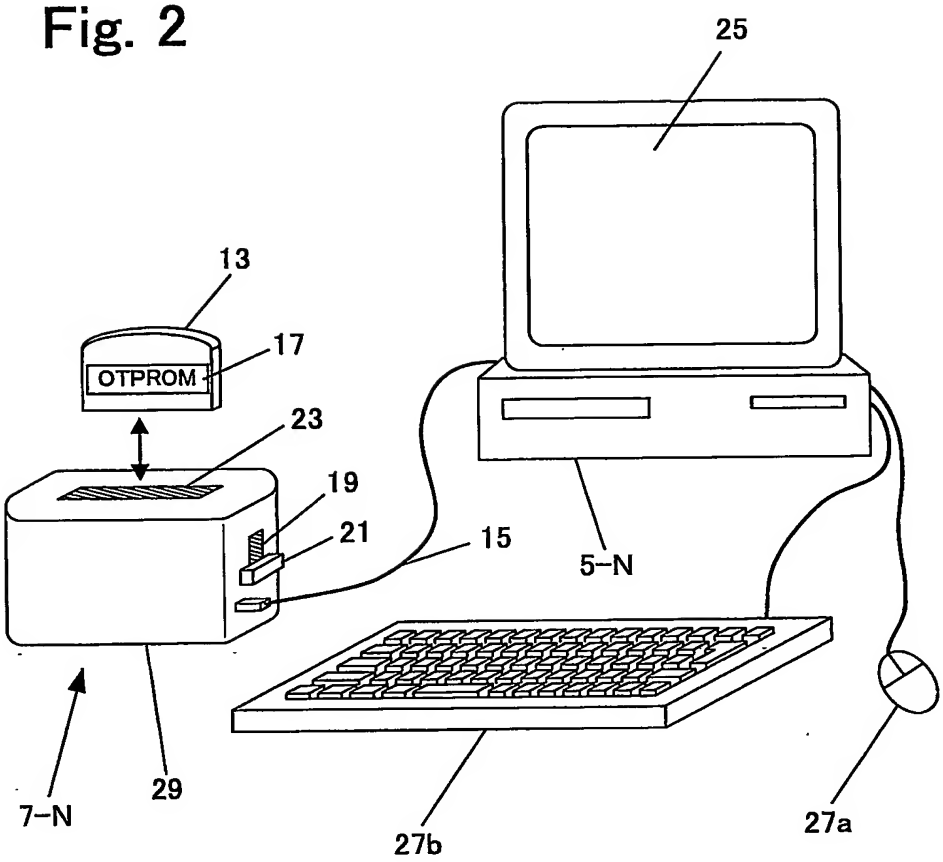


Fig. 3

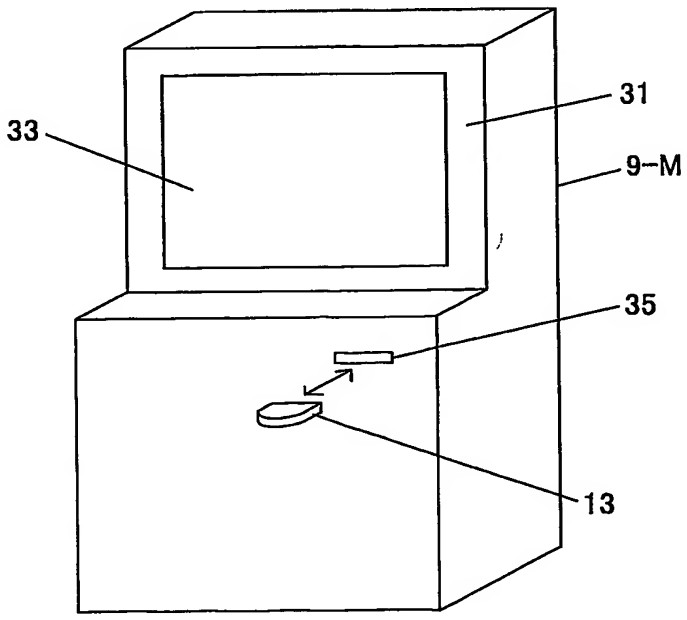


Fig. 4

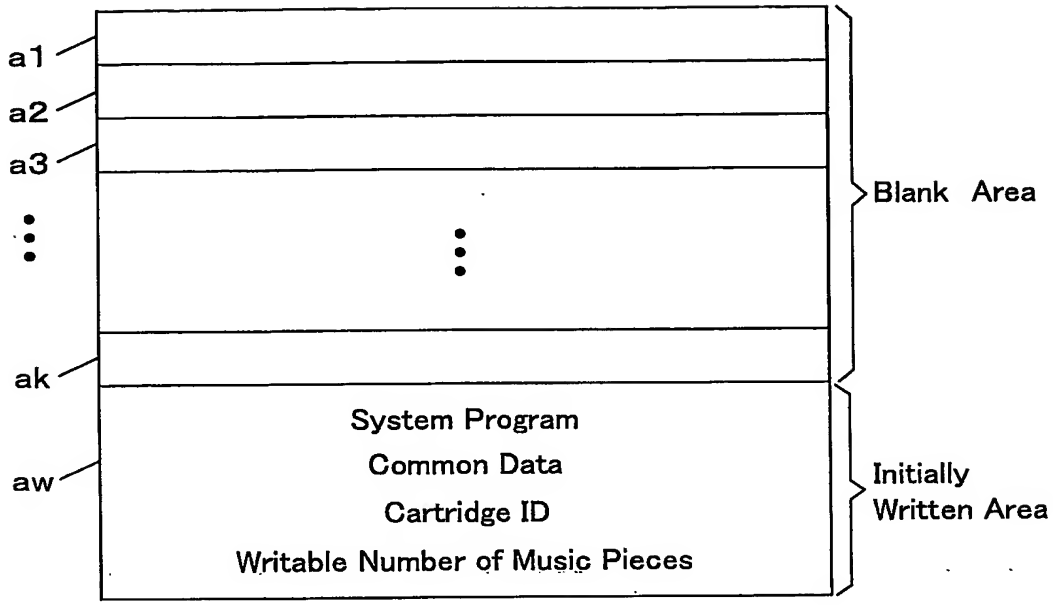

a1
a2
a3
ak
aw
System Program
Common Data
Cartridge ID
Writable Number of Music Pieces
Blank Area
Initially
Written Area

Fig. 5

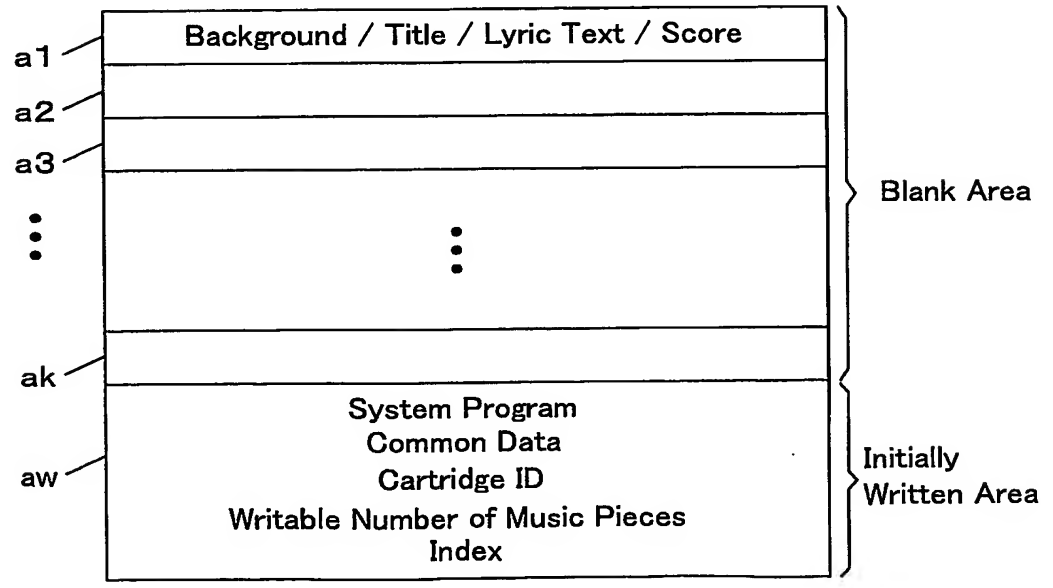

a1
a2
a3
ak
aw
Background / Title / Lyric Text / Score
System Program
Common Data
Cartridge ID
Writable Number of Music Pieces
Index
Blank Area
Initially
Written Area

Fig. 6

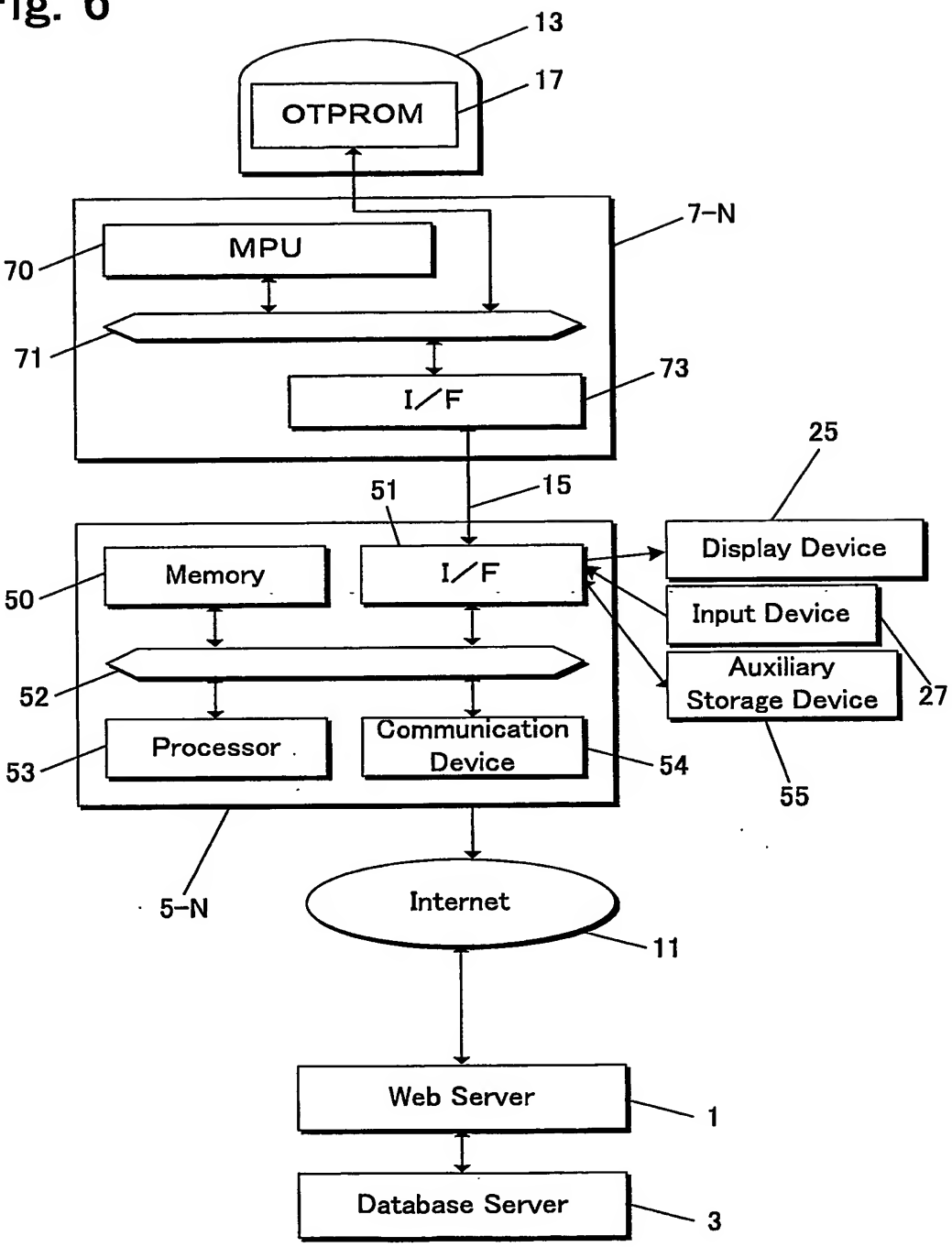

13
17
OTPROM
7-N
MPU
70
71
73
I/F
25
51
15
Memory
I/F
Display Device
Input Device
Auxiliary Storage Device
27
50
52
Processor
Communication Device
53
54
55
5-N
Internet
11
Web Server
1
Database Server
3

Fig. 7

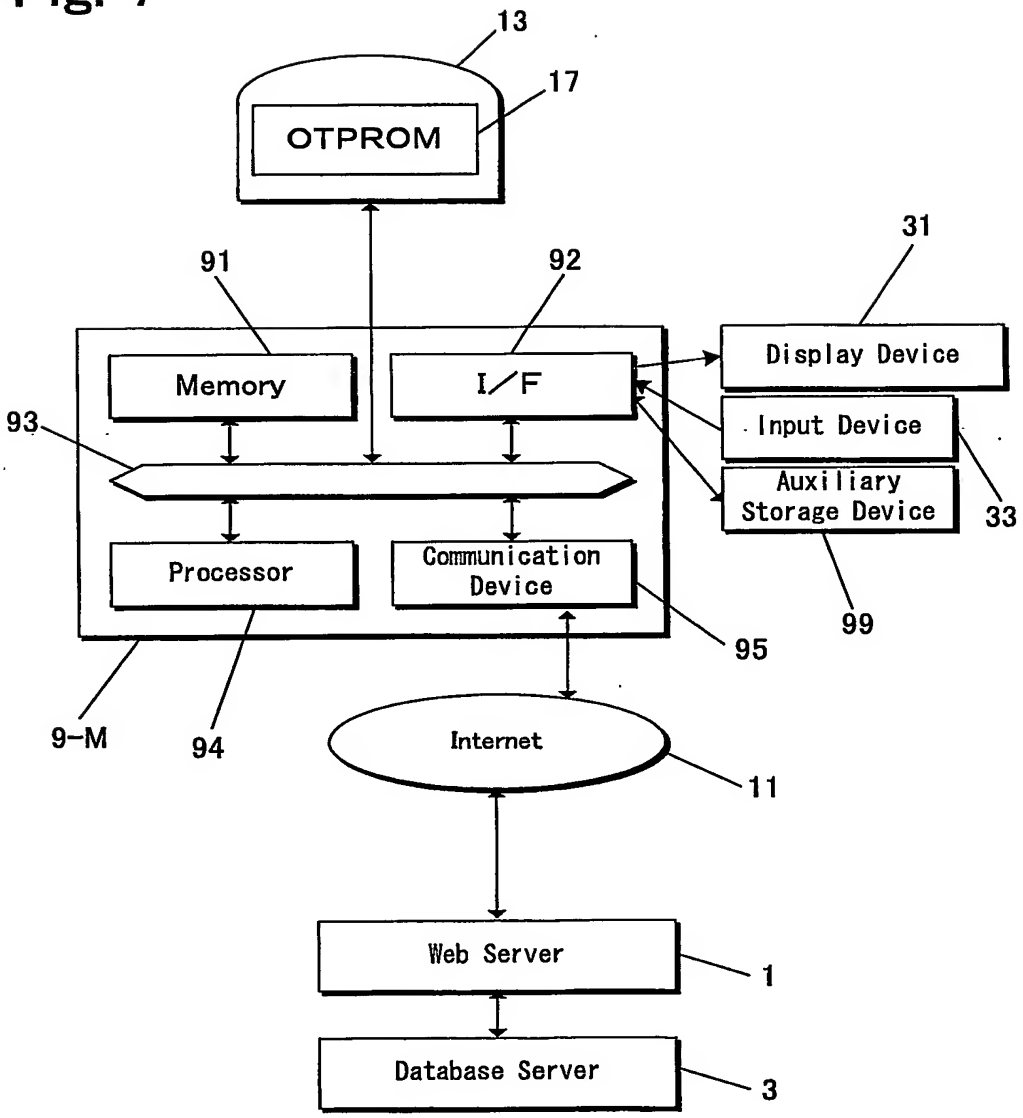

13
17
OTPROM
31
91
92
Memory
I/F
Display Device
Input Device
Auxiliary Storage Device
33
93
Processor
Communication Device
99
95
9-M
94
Internet
11
Web Server
1
Database Server
3

Fig. 8

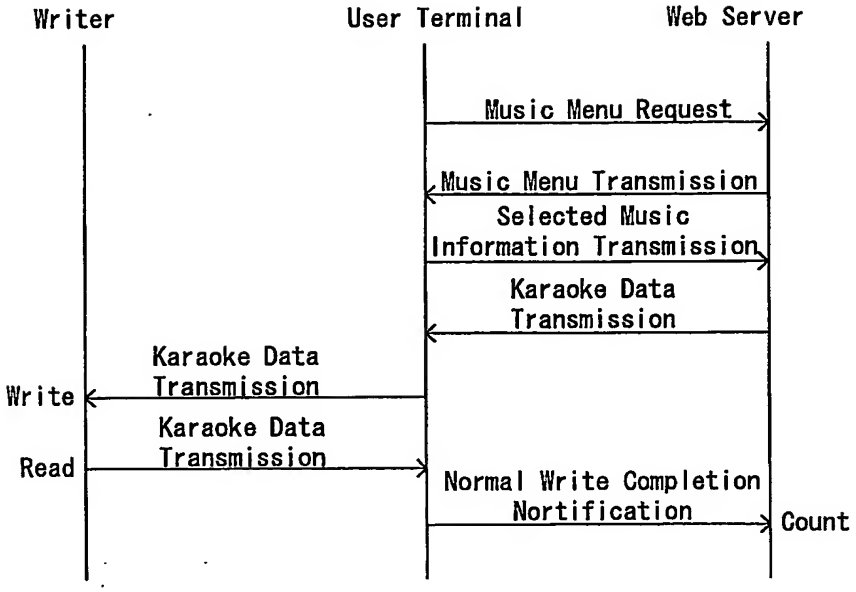
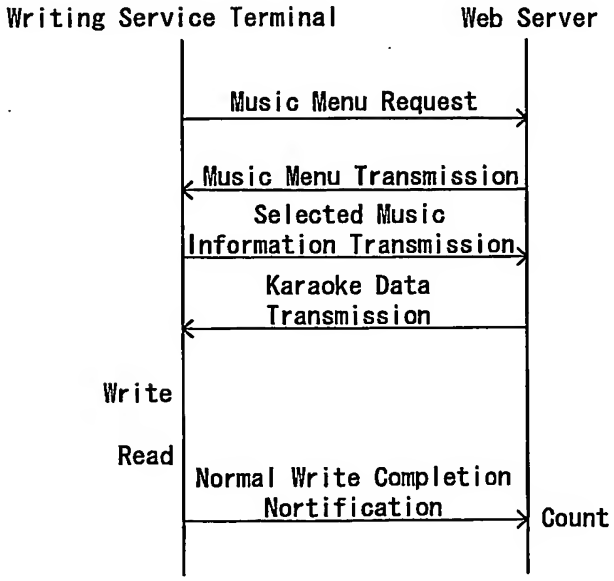

Writer
User Terminal
Web Server
Music Menu Request
Music Menu Transmission
Selected Music Information Transmission
Karaoke Data Transmission
Karaoke Data Transmission
Write
Karaoke Data Transmission
Read
Normal Write Completion Nortification
Count

Fig. 9


Writing Service Terminal
Web Server
Music Menu Request
Music Menu Transmission
Selected Music Information Transmission
Karaoke Data Transmission
Write
Read
Normal Write Completion Nortification
Count

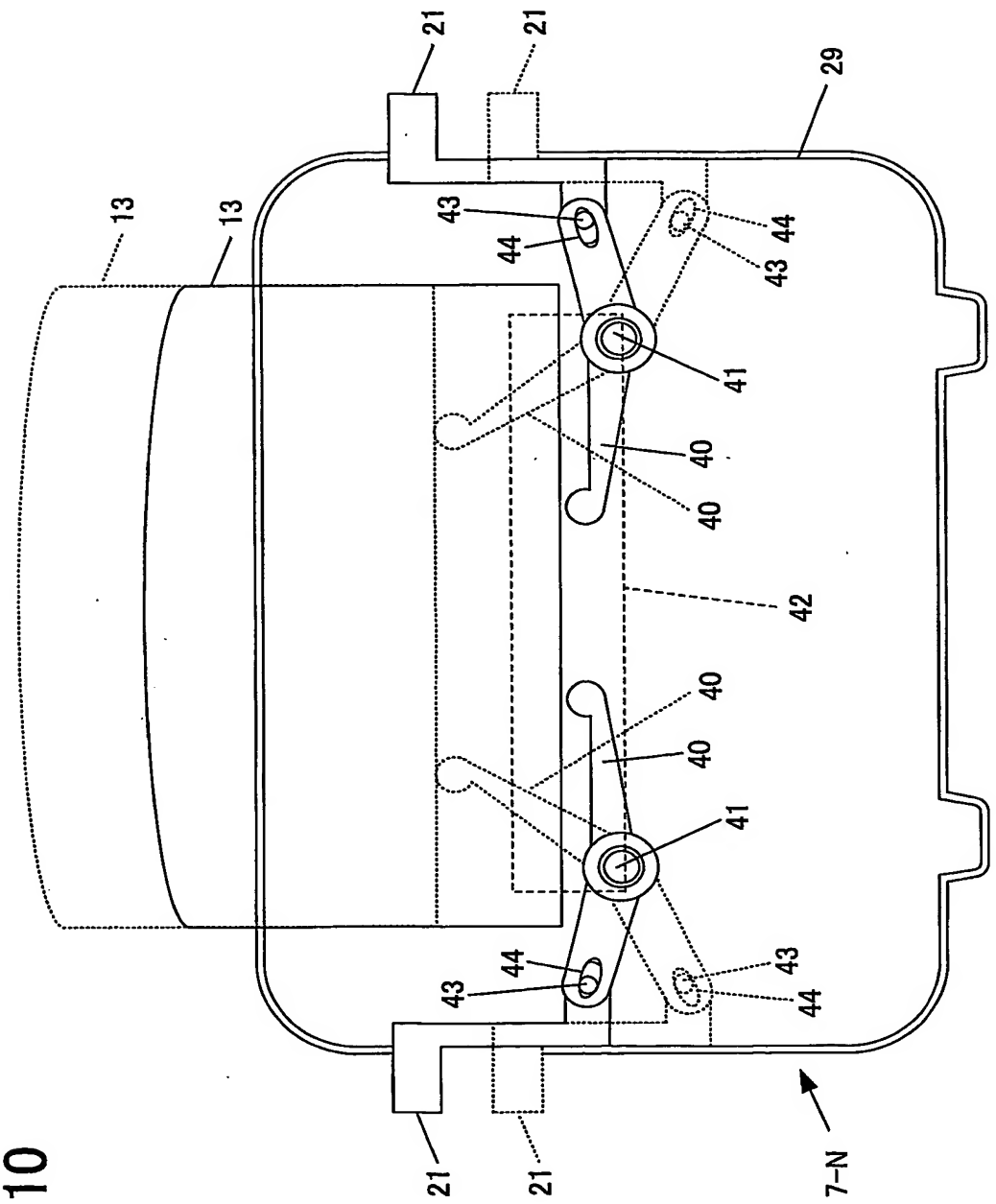


Fig. 10

Fig. 11

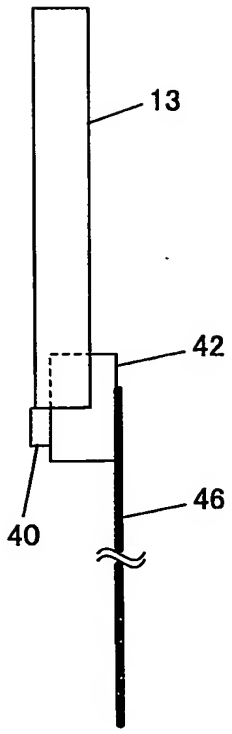

13
42
46
40

Fig. 12

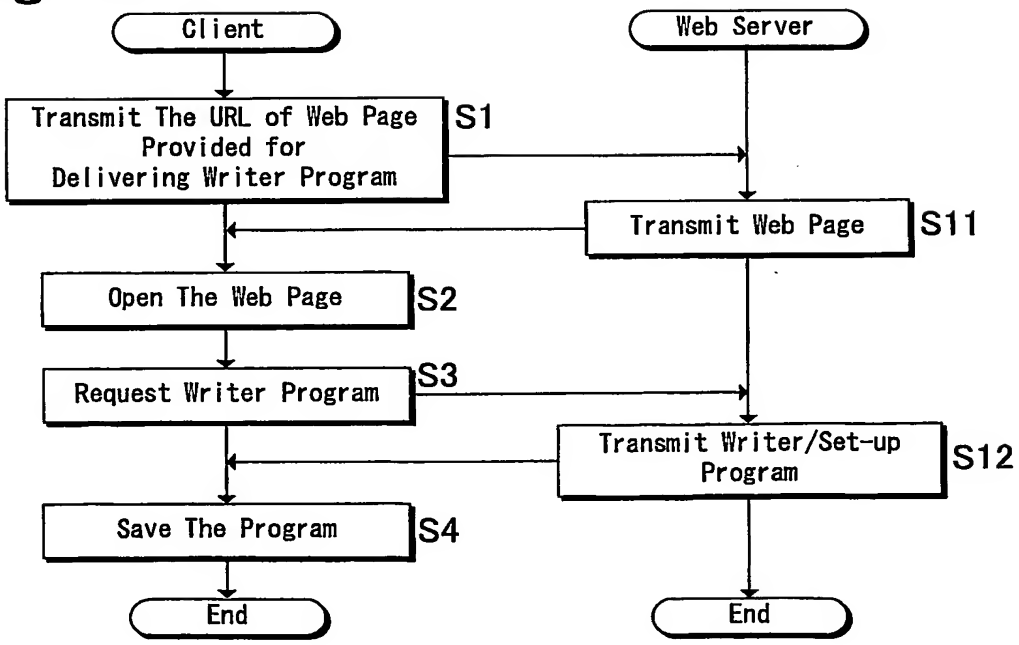

Client
Web Server
Transmit The URL of Web Page Provided for Delivering Writer Program
S1
Transmit Web Page
S11
Open The Web Page
S2
Request Writer Program
S3
Transmit Writer/Set-up Program
S12
Save The Program
S4
End
End

Fig. 13

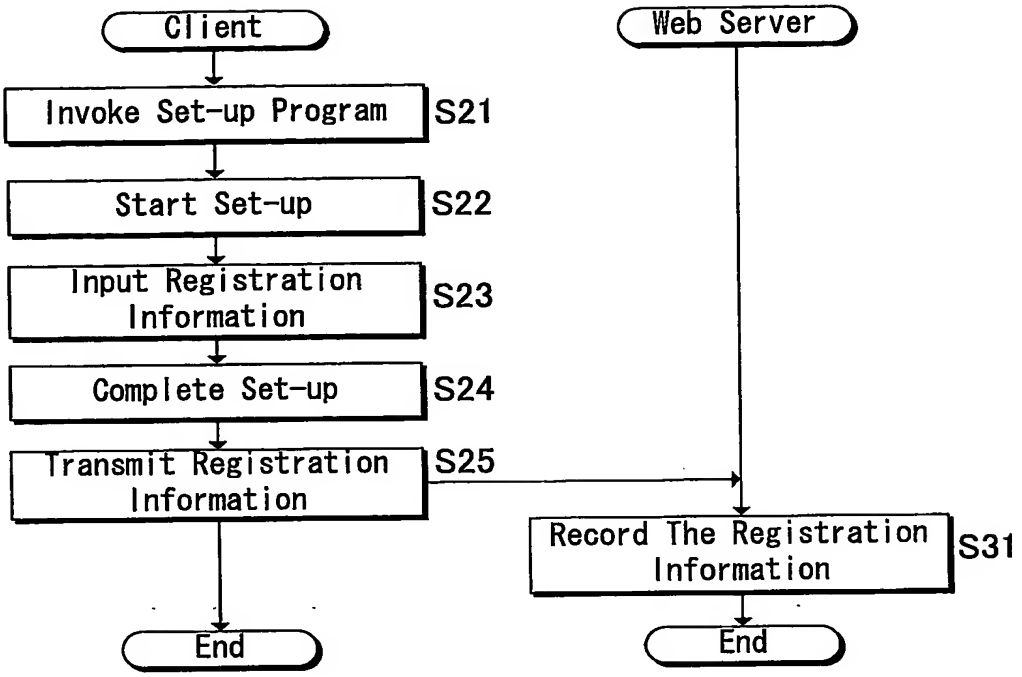

Client
Web Server
Invoke Set-up Program
S21
Start Set-up
S22
Input Registration Information
S23
Complete Set-up
S24
Transmit Registration Information
S25
Record The Registration Information
S31
End
End

Fig. 14

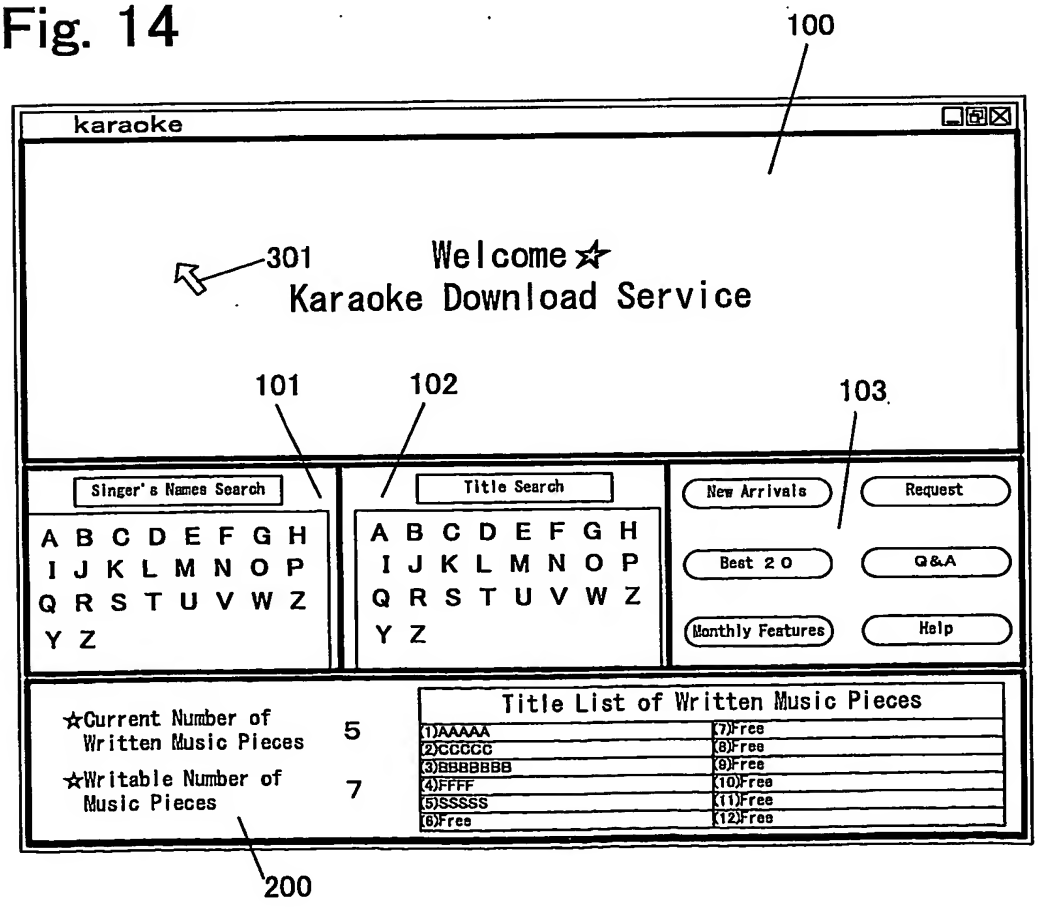

100
karaoke
301
Welcome☆
Karaoke Download Service
101
102
103
Singer's Names Search
A B C D E F G H
I J K L M N O P
Q R S T U V W Z
Y Z
Title Search
A B C D E F G H
I J K L M N O P
Q R S T U V W Z
Y Z
New Arrivals
Request
Best 20
Q&A
Monthly Features
Help
☆Current Number of Written Music Pieces
5
☆Writable Number of Music Pieces
7
Title List of Written Music Pieces
(1)AAAAA
(2)CCCCC
(3)BBBBBBB
(4)FFFF
(5)SSSSS
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
200

Fig. 15

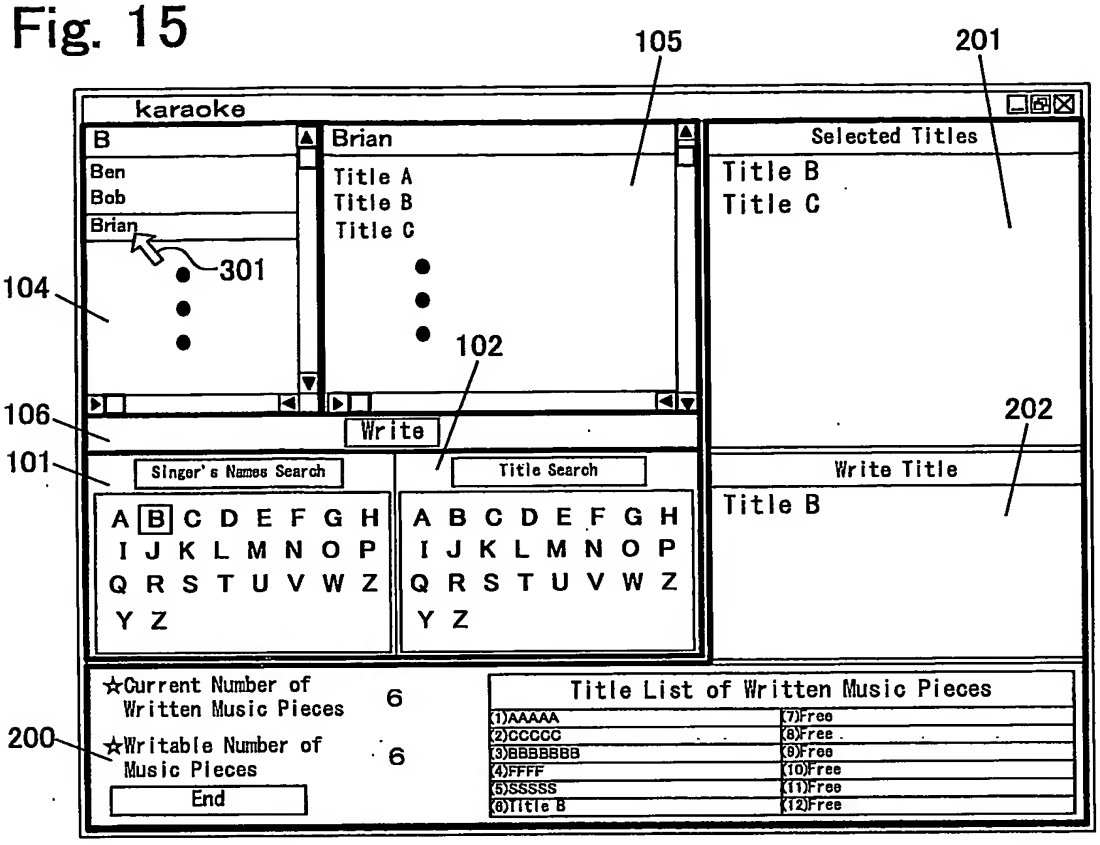

105
201
karaoke
B
Ben
Bob
Brian
301
104
Brian
Title A
Title B
Title C
102
Selected Titles
Title B
Title C
202
106
Write
101
Singer's Names Search
Title Search
A B C D E F G H
I J K L M N O P
Q R S T U V W Z
Y Z
Write Title
Title B
☆Current Number of Written Music Pieces
6
200
☆Writable Number of Music Pieces
6
End
Title List of Written Music Pieces
(1)AAAAA
(2)CCCCC
(3)BBBBBBB
(4)FFFF
(5)SSSSS
(6)Title B
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free

Fig. 16

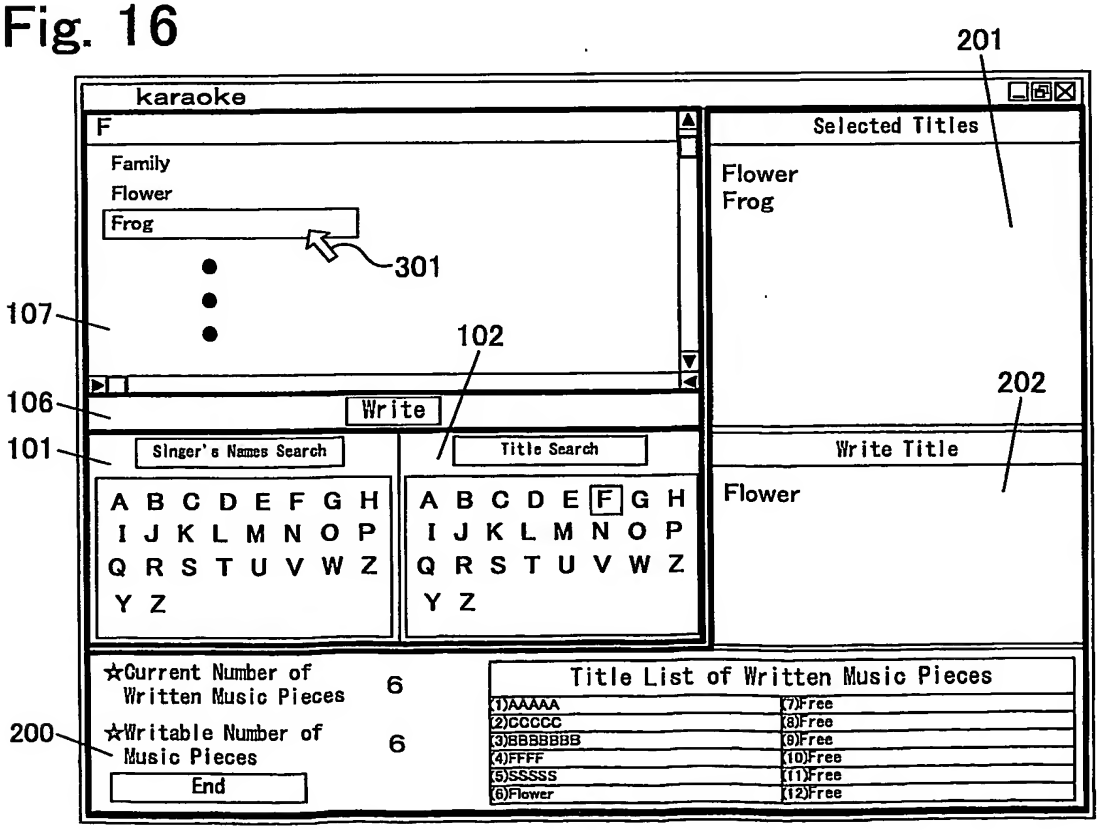

201
karaoke
F
Family
Flower
Frog
301
107
102
Selected Titles
Flower
Frog
202
106
Write
101
Singer's Names Search
Title Search
A B C D E F G H
I J K L M N O P
Q R S T U V W Z
Y Z
Write Title
Flower
☆Current Number of Written Music Pieces
6
200
☆Writable Number of Music Pieces
6
End
Title List of Written Music Pieces
(1)AAAAA
(2)CCCCC
(3)BBBBBBB
(4)FFFF
(5)SSSSS
(6)Flower
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free

Fig. 17

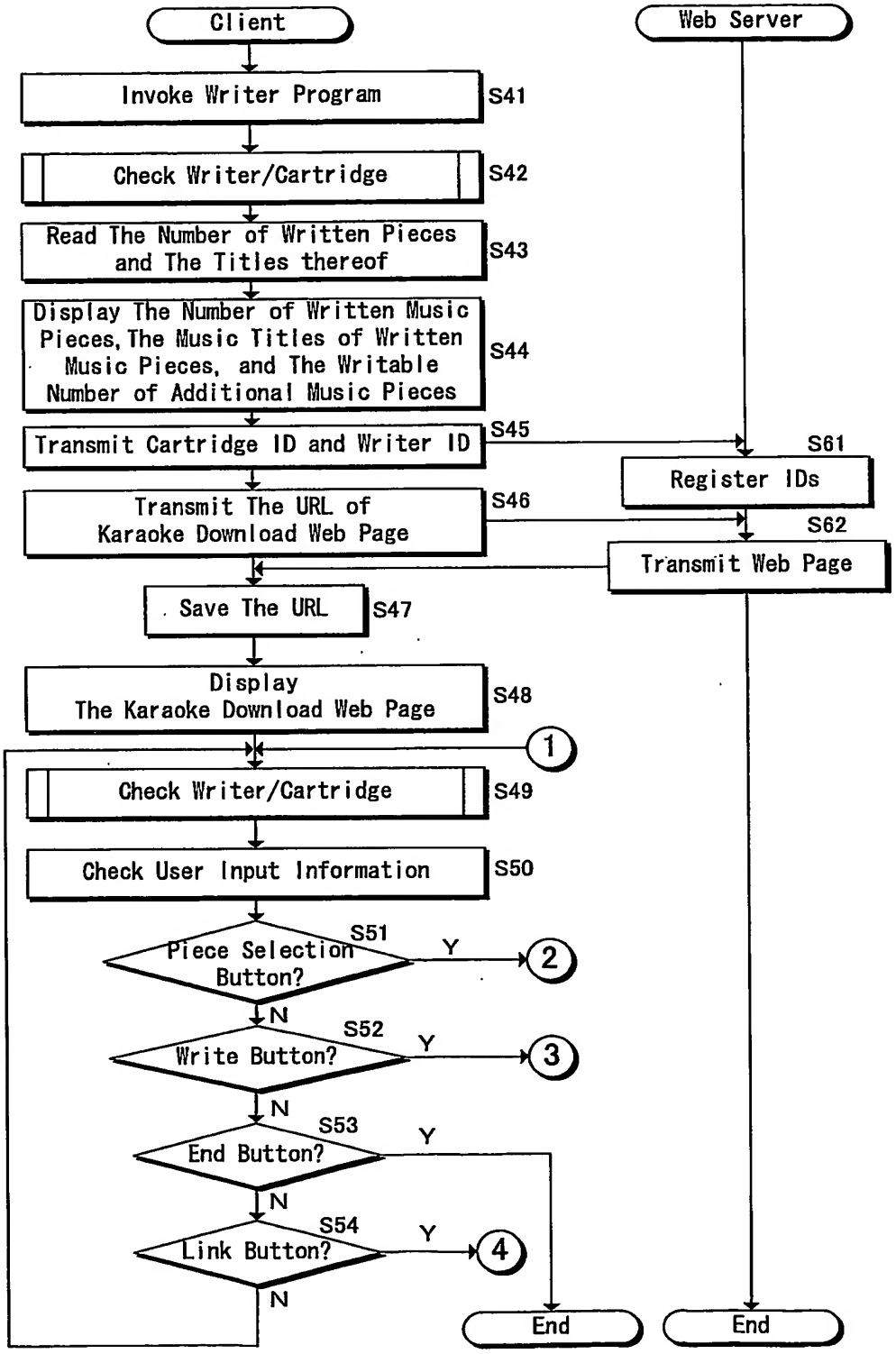

Client
Web Server
Invoke Writer Program
S41
Check Writer/Cartridge
S42
Read The Number of Written Pieces and The Titles thereof
S43
Display The Number of Written Music Pieces, The Music Titles of Written Music Pieces, and The Writable Number of Additional Music Pieces
S44
Transmit Cartridge ID and Writer ID
S45
S61
Register IDs
Transmit The URL of Karaoke Download Web Page
S46
S62
Transmit Web Page
Save The URL
S47
Display The Karaoke Download Web Page
S48
1
Check Writer/Cartridge
S49
Check User Input Information
S50
Piece Selection Button?
S51
Y
2
N
Write Button?
S52
Y
3
N
End Button?
S53
Y
N
Link Button?
S54
Y
4
N
End
End

Fig. 18

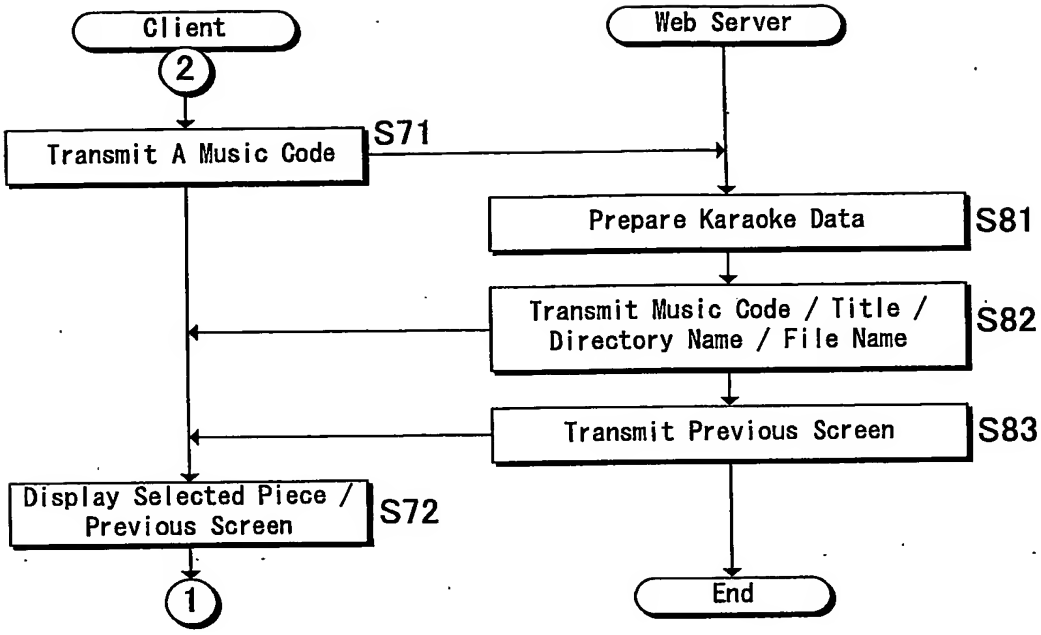

Client
2
Transmit A Music Code
S71
Display Selected Piece / Previous Screen
S72
1
Web Server
Prepare Karaoke Data
S81
Transmit Music Code / Title / Directory Name / File Name
S82
Transmit Previous Screen
S83
End

Fig. 19

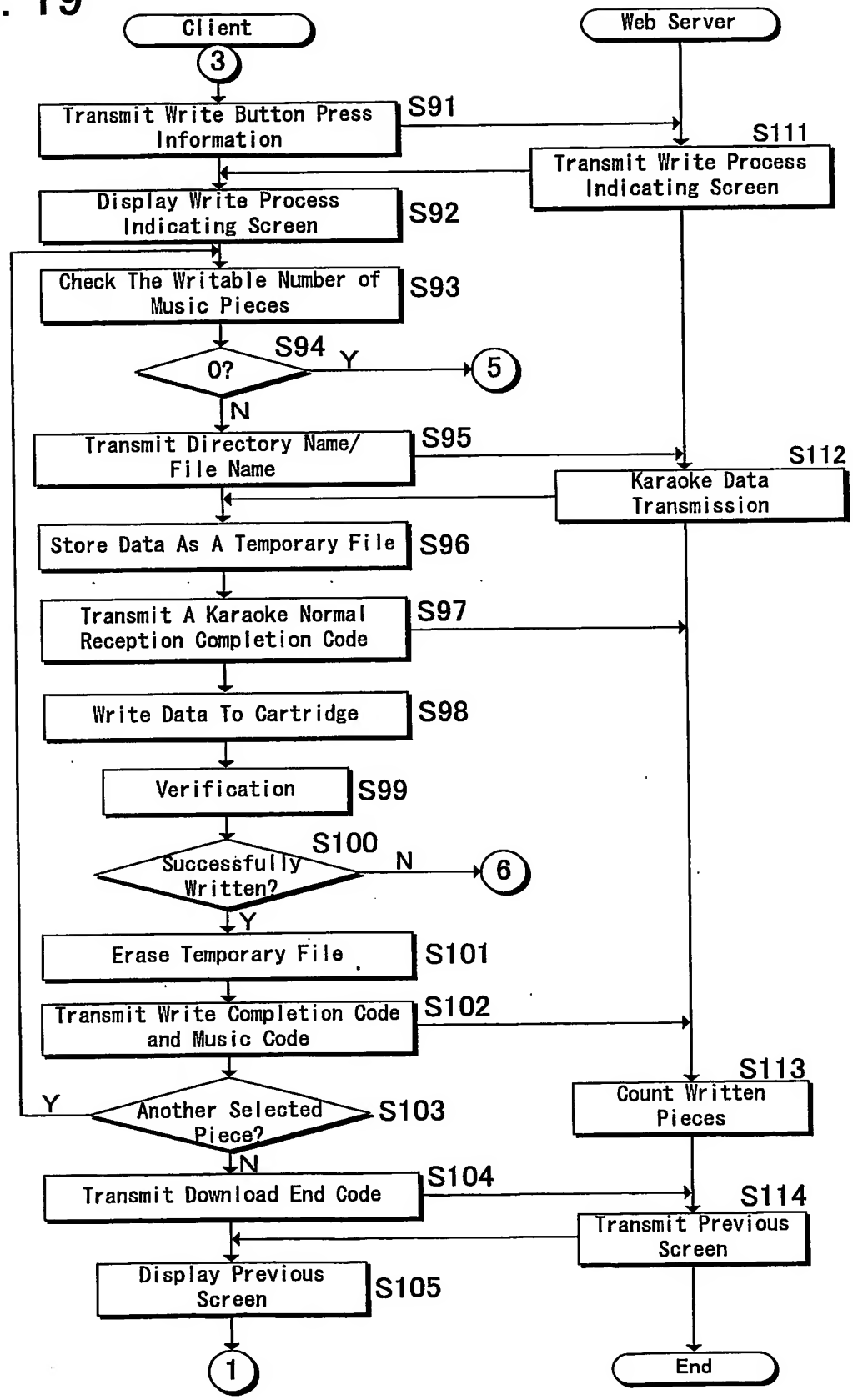

Client
Web Server
3
Transmit Write Button Press Information
S91
S111
Transmit Write Process Indicating Screen
Display Write Process Indicating Screen
S92
Check The Writable Number of Music Pieces
S93
S94
0?
Y
5
N
Transmit Directory Name/ File Name
S95
S112
Karaoke Data Transmission
Store Data As A Temporary File
S96
Transmit A Karaoke Normal Reception Completion Code
S97
Write Data To Cartridge
S98
Verification
S99
S100
Successfully Written?
N
6
Y
Erase Temporary File
S101
Transmit Write Completion Code and Music Code
S102
S113
Count Written Pieces
Y
Another Selected Piece?
S103
N
Transmit Download End Code
S104
S114
Transmit Previous Screen
Display Previous Screen
S105
1
End

Fig. 20

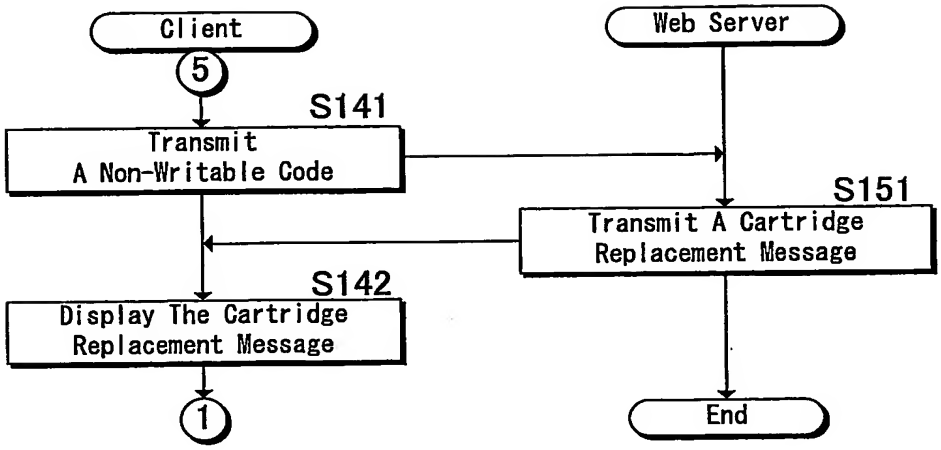

Client
5
S141
Transmit
A Non-Writable Code
S142
Display The Cartridge
Replacement Message
1
Web Server
S151
Transmit A Cartridge
Replacement Message
End

Fig. 21

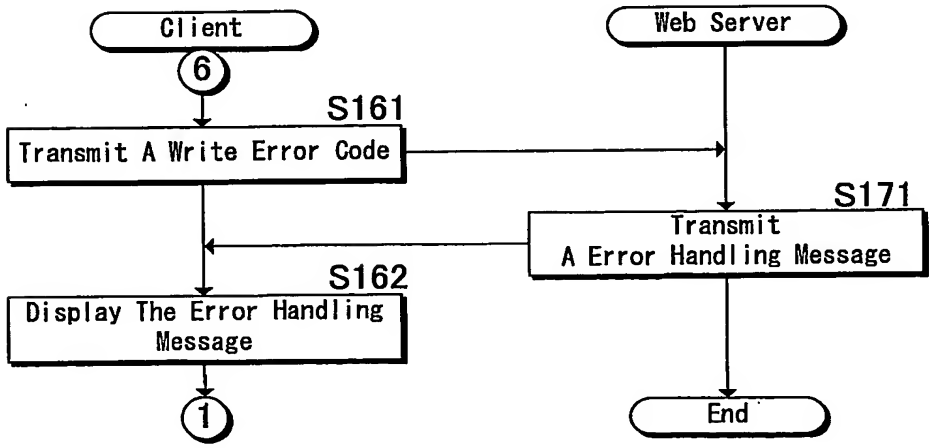

Client
6
S161
Transmit A Write Error Code
S162
Display The Error Handling
Message
1
Web Server
S171
Transmit
A Error Handling Message
End

Fig. 22

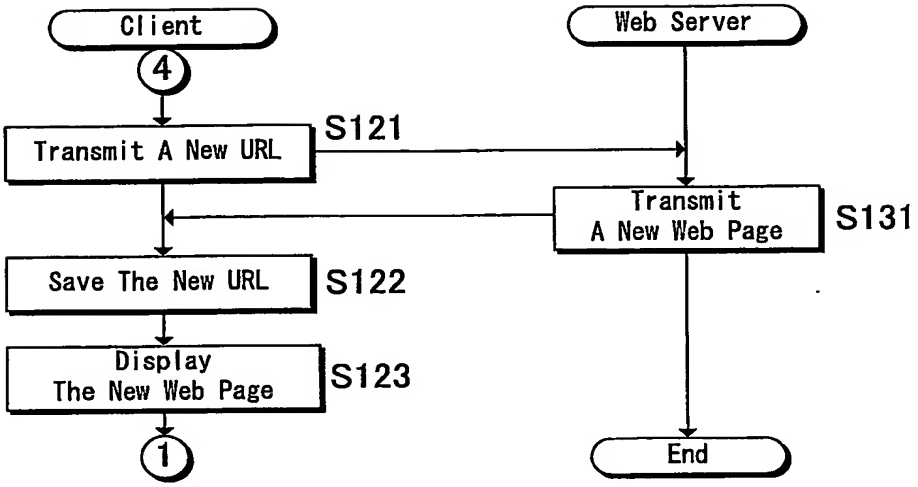

Client
Web Server
4
Transmit A New URL
S121
Transmit
A New Web Page
S131
Save The New URL
S122
Display
The New Web Page
S123
1
End

Fig. 23

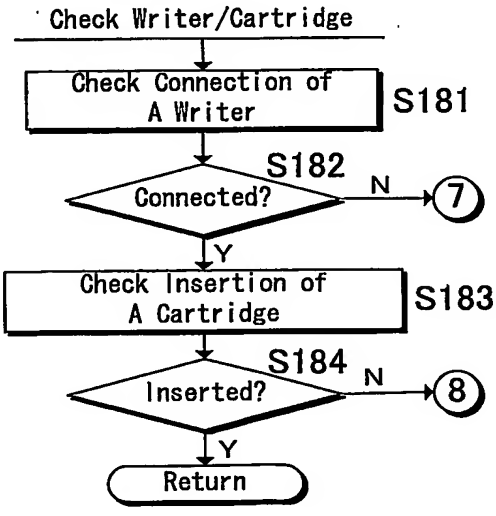

Check Writer/Cartridge
Check Connection of
A Writer
S181
S182
Connected?
N
7
Y
Check Insertion of
A Cartridge
S183
S184
Inserted?
N
8
Y
Return

Fig. 24

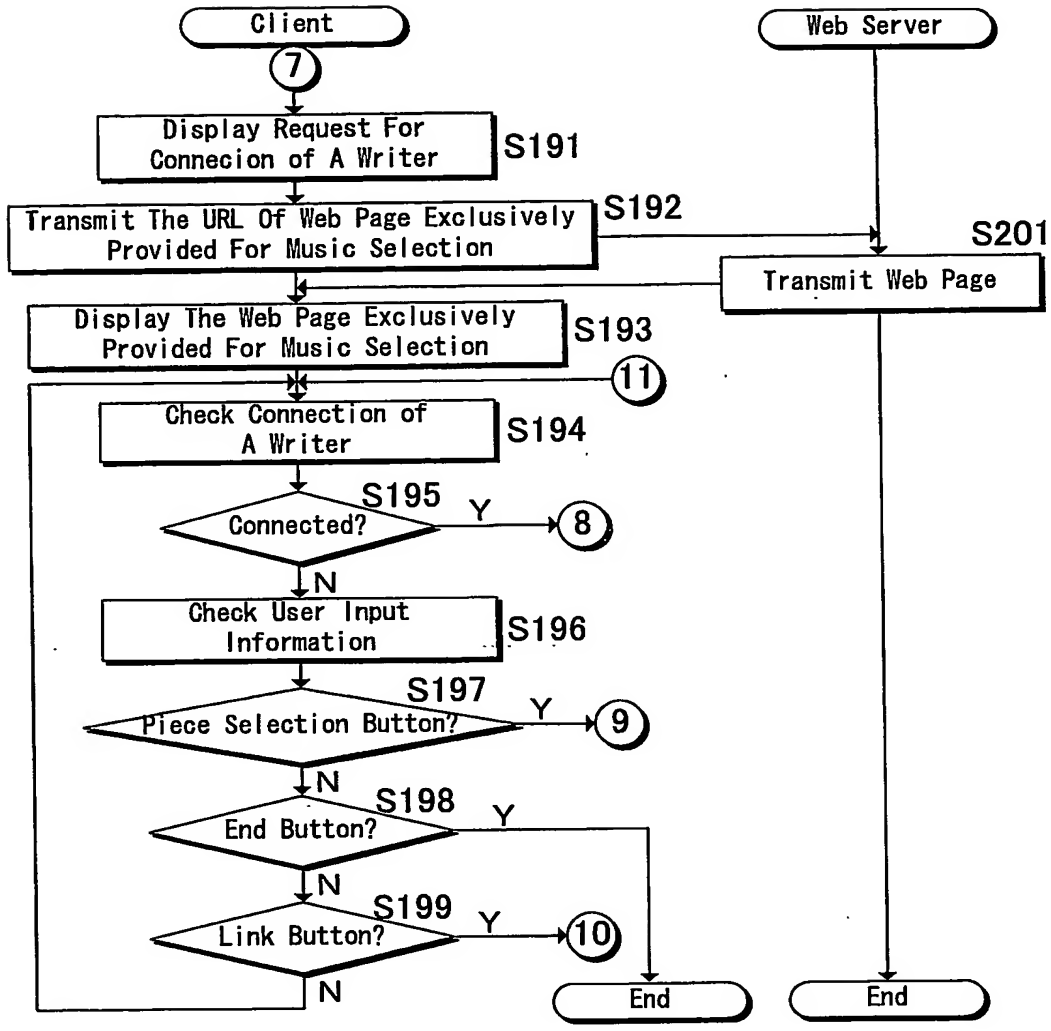

Client
Web Server
7
Display Request For Connecion of A Writer
S191
Transmit The URL Of Web Page Exclusively Provided For Music Selection
S192
S201
Transmit Web Page
Display The Web Page Exclusively Provided For Music Selection
S193
11
Check Connection of A Writer
S194
S195
Connected?
Y
8
N
Check User Input Information
S196
S197
Piece Selection Button?
Y
9
N
S198
End Button?
Y
N
S199
Link Button?
Y
10
N
End
End

Fig. 25

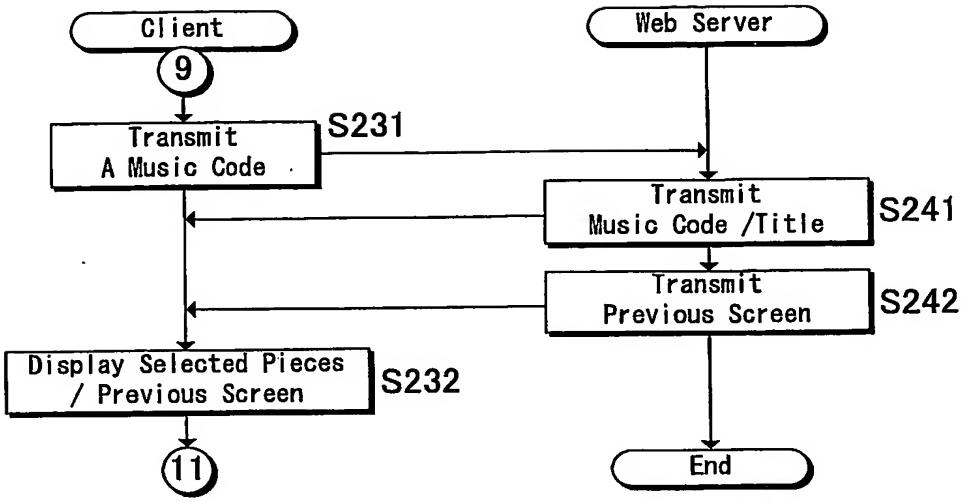

Client
9
Transmit
A Music Code
S231
Web Server
Transmit
Music Code /Title
S241
Transmit
Previous Screen
S242
Display Selected Pieces
/ Previous Screen
S232
11
End

Fig. 26

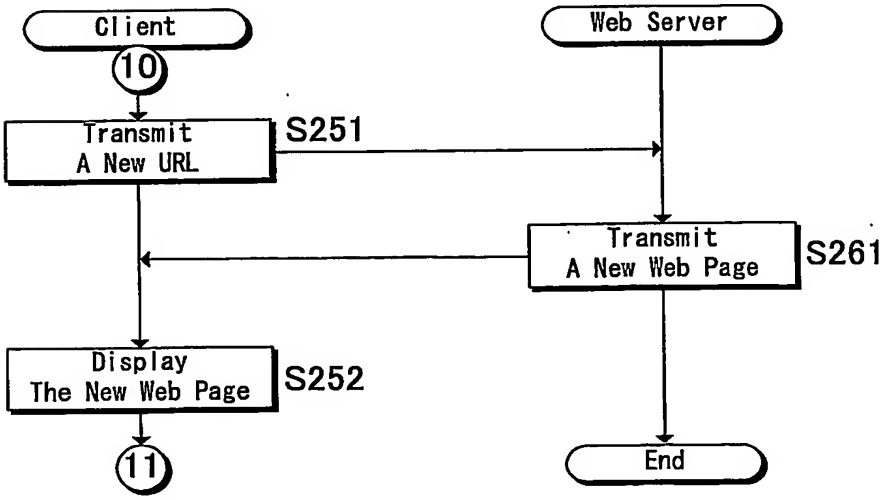

Client
10
Transmit
A New URL
S251
Web Server
Transmit
A New Web Page
S261
Display
The New Web Page
S252
11
End

Fig. 27

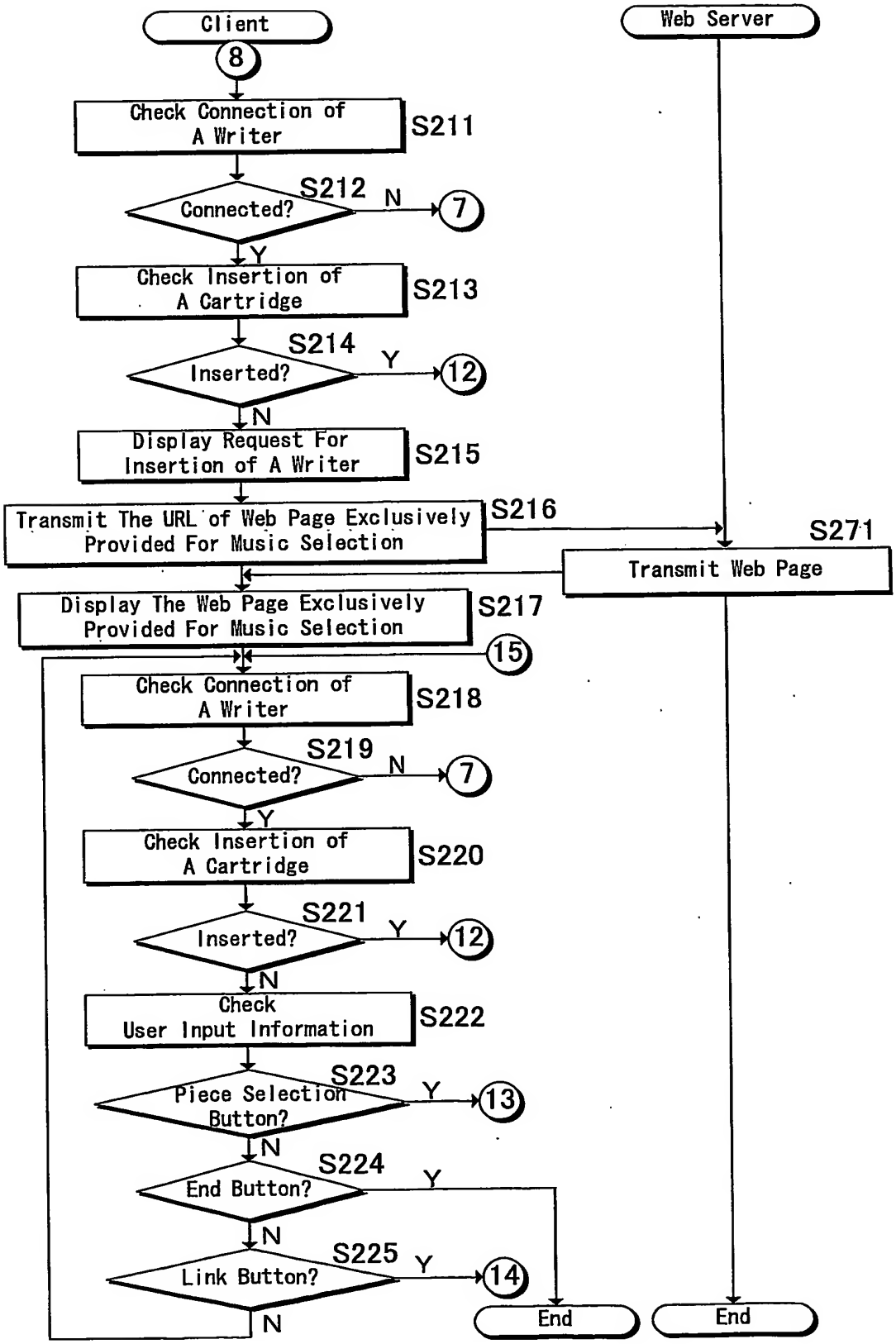

Client
Web Server
8
Check Connection of A Writer
S211
S212
Connected?
N
7
Y
Check Insertion of A Cartridge
S213
S214
Inserted?
Y
12
N
Display Request For Insertion of A Writer
S215
Transmit The URL of Web Page Exclusively Provided For Music Selection
S216
S271
Transmit Web Page
Display The Web Page Exclusively Provided For Music Selection
S217
15
Check Connection of A Writer
S218
S219
Connected?
N
7
Y
Check Insertion of A Cartridge
S220
S221
Inserted?
Y
12
N
Check User Input Information
S222
S223
Piece Selection Button?
Y
13
N
S224
End Button?
Y
N
S225
Link Button?
Y
14
N
End
End

Fig. 28

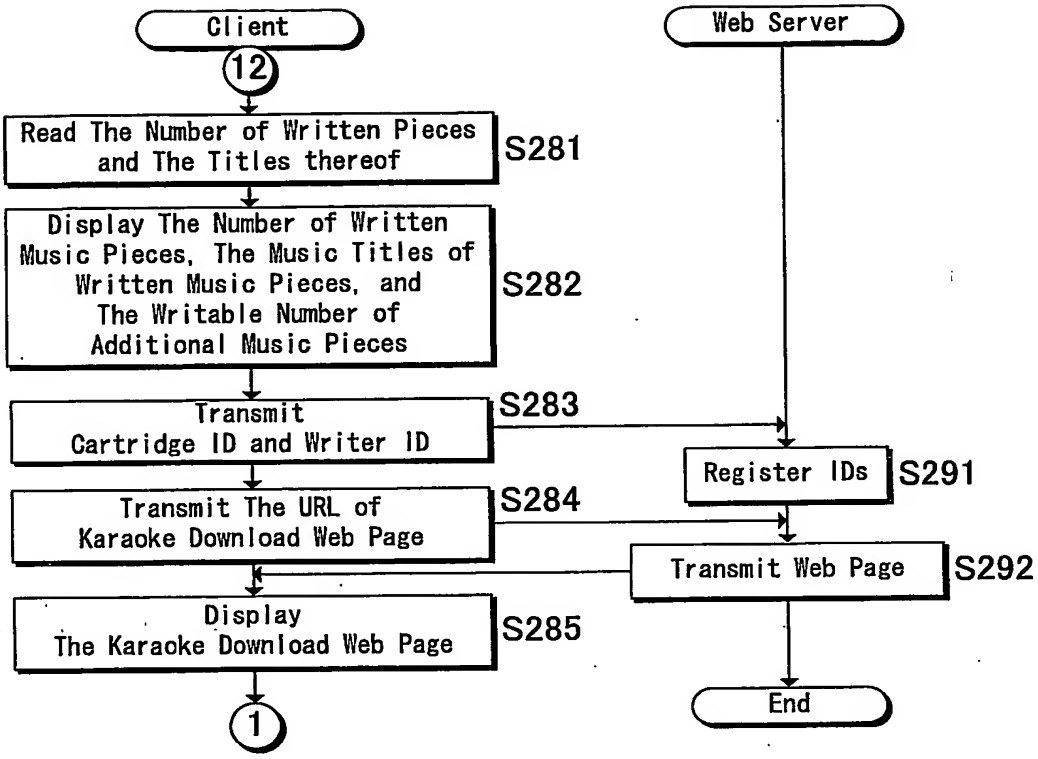

Client
12
Read The Number of Written Pieces and The Titles thereof
S281
Display The Number of Written Music Pieces, The Music Titles of Written Music Pieces, and The Writable Number of Additional Music Pieces
S282
Transmit Cartridge ID and Writer ID
S283
Transmit The URL of Karaoke Download Web Page
S284
Display The Karaoke Download Web Page
S285
1
Web Server
Register IDs
S291
Transmit Web Page
S292
End

Fig. 29

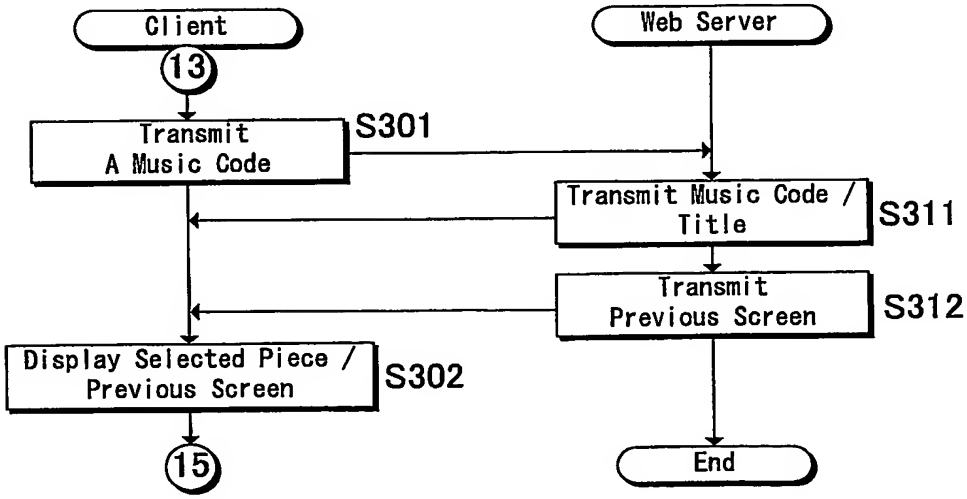

Client
13
Transmit A Music Code
S301
Display Selected Piece / Previous Screen
S302
15
Web Server
Transmit Music Code / Title
S311
Transmit Previous Screen
S312
End

Fig. 30

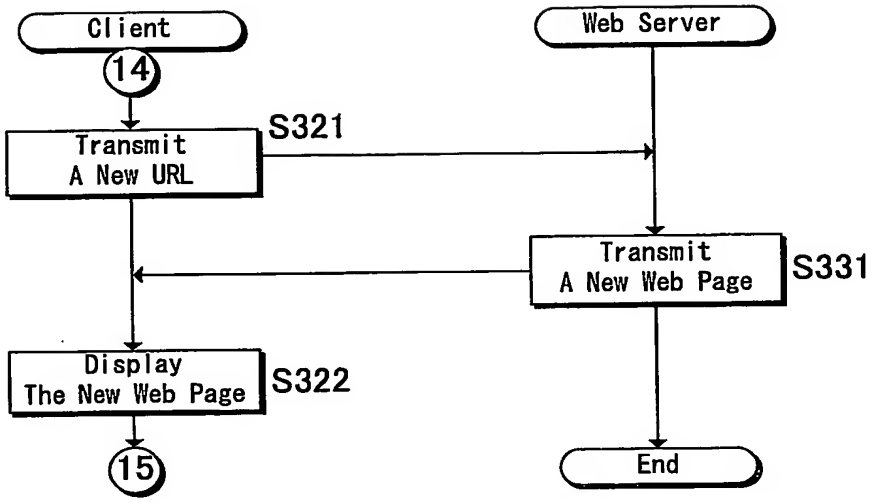

Client
Web Server
14
S321
Transmit
A New URL
Transmit
A New Web Page
S331
Display
The New Web Page
S322
15
End

Fig. 31

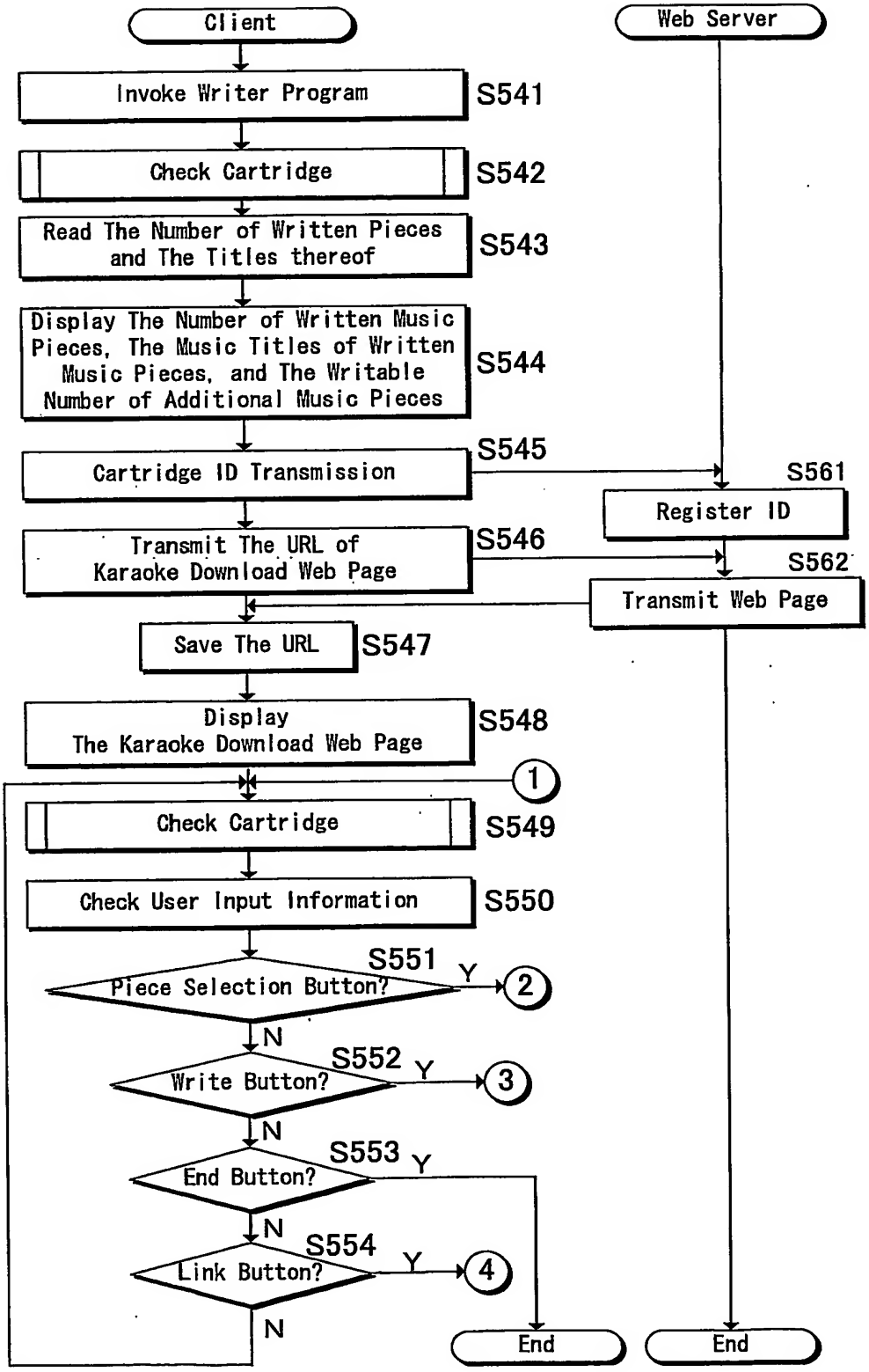

Client
Web Server
Invoke Writer Program
S541
Check Cartridge
S542
Read The Number of Written Pieces and The Titles thereof
S543
Display The Number of Written Music Pieces, The Music Titles of Written Music Pieces, and The Writable Number of Additional Music Pieces
S544
Cartridge ID Transmission
S545
S561
Register ID
Transmit The URL of Karaoke Download Web Page
S546
S562
Transmit Web Page
Save The URL
S547
Display The Karaoke Download Web Page
S548
1
Check Cartridge
S549
Check User Input Information
S550
S551
Piece Selection Button?
Y
2
N
S552
Write Button?
Y
3
N
S553
End Button?
Y
N
S554
Link Button?
Y
4
N
End
End

Fig. 32

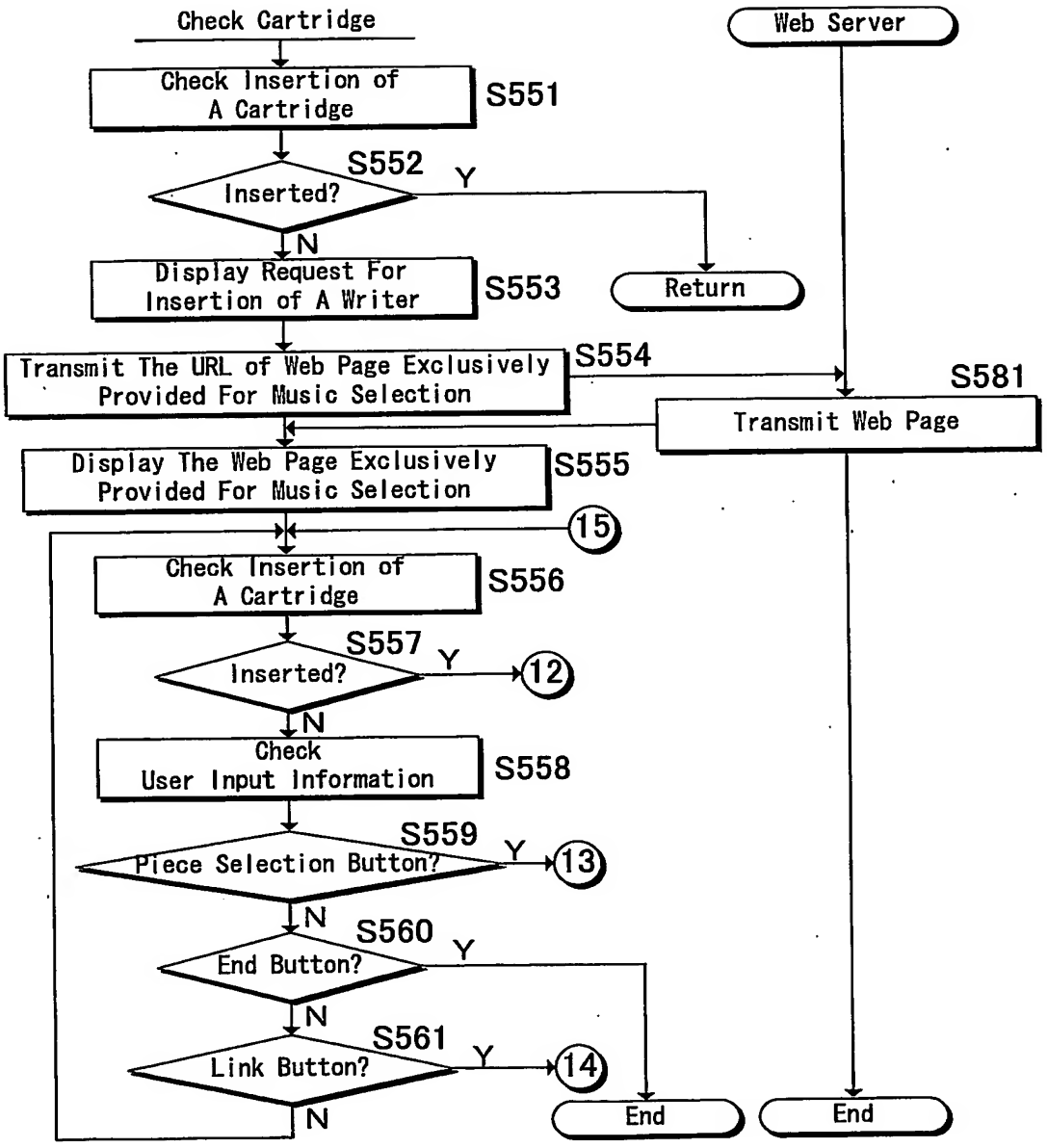
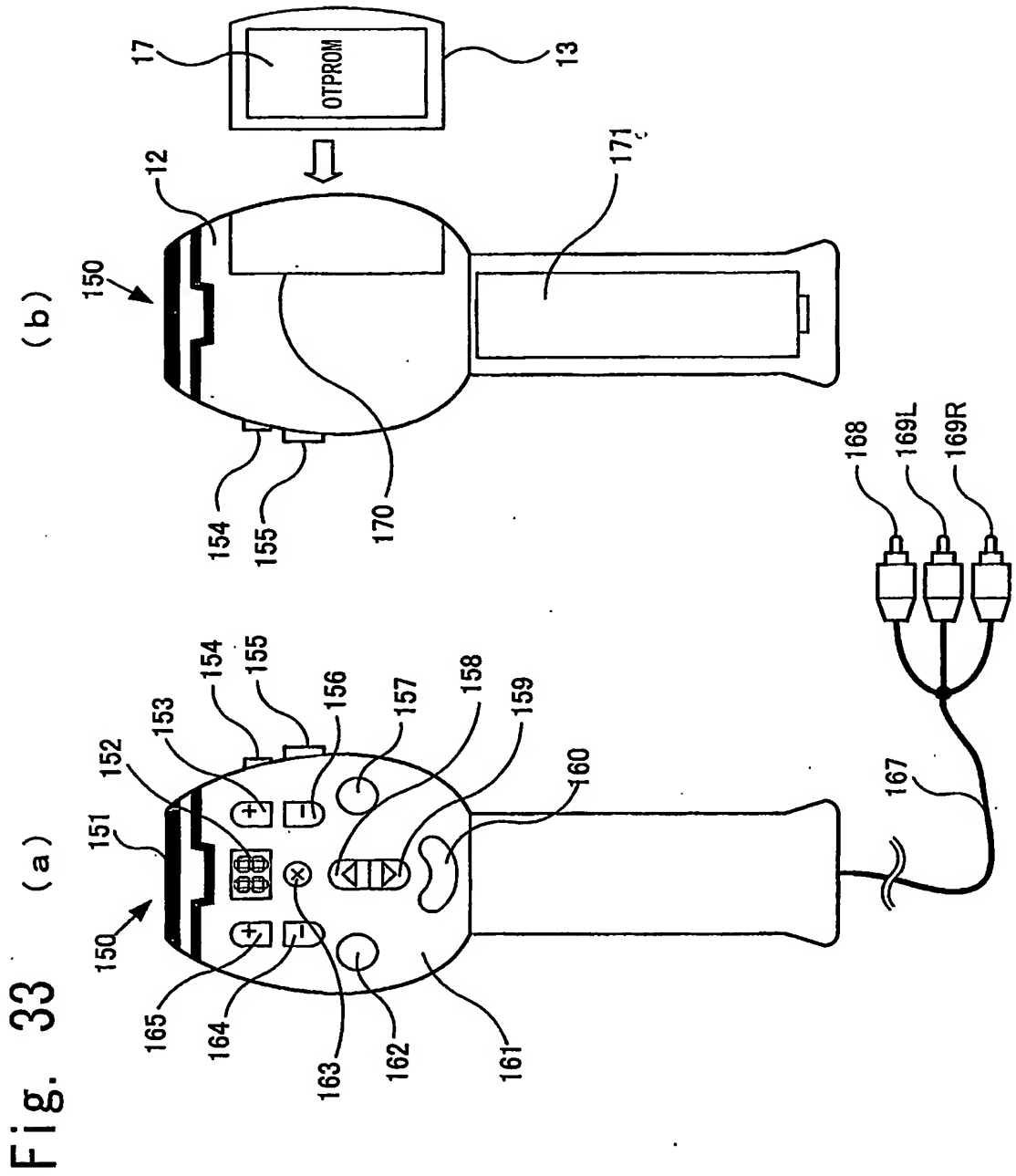

Check Cartridge
Check Insertion of A Cartridge
S551
S552
Inserted?
Y
N
Display Request For Insertion of A Writer
S553
Return
Transmit The URL of Web Page Exclusively Provided For Music Selection
S554
Web Server
S581
Transmit Web Page
Display The Web Page Exclusively Provided For Music Selection
S555
15
Check Insertion of A Cartridge
S556
S557
Inserted?
Y
12
N
Check User Input Information
S558
S559
Piece Selection Button?
Y
13
N
S560
End Button?
Y
N
S561
Link Button?
Y
14
N
End
End

Fig. 33


(a)
(b)
OTPROM
17
13
12
171
150
154
155
170
168
169L
169R
153
156
157
158
159
160
152
151
167
165
164
163
162
161

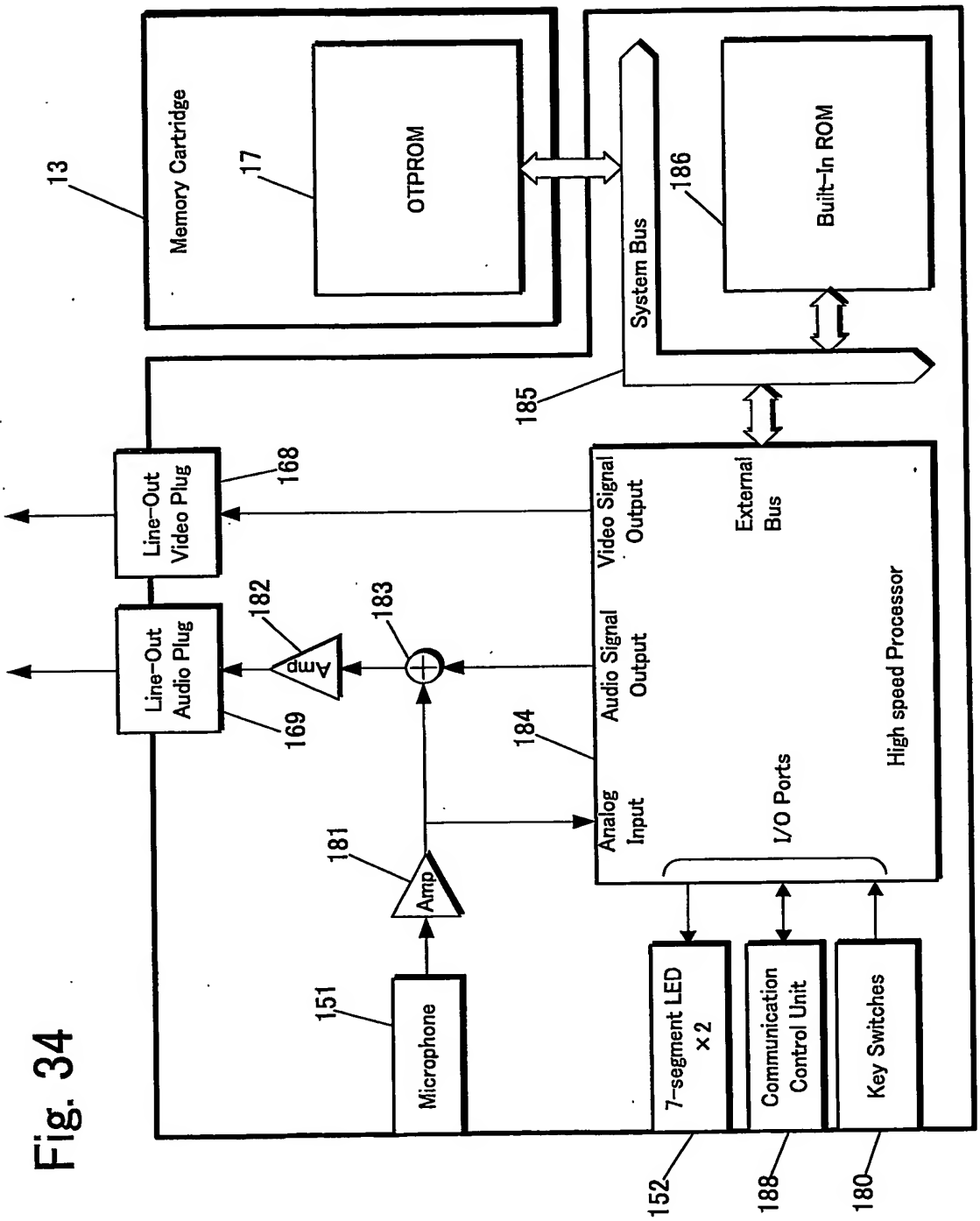

13
Memory Cartridge
17
OTPROM
186
System Bus
Built-In ROM
185
168
Line-Out Video Plug
Video Signal Output
External Bus
182
183
Amp
Line-Out Audio Plug
169
Audio Signal Output
184
High speed Processor
Analog Input
I/O Ports
181
Amp
151
Microphone
7-segment LED x2
Communication Control Unit
Key Switches
152
188
180

Fig. 34

Fig. 35

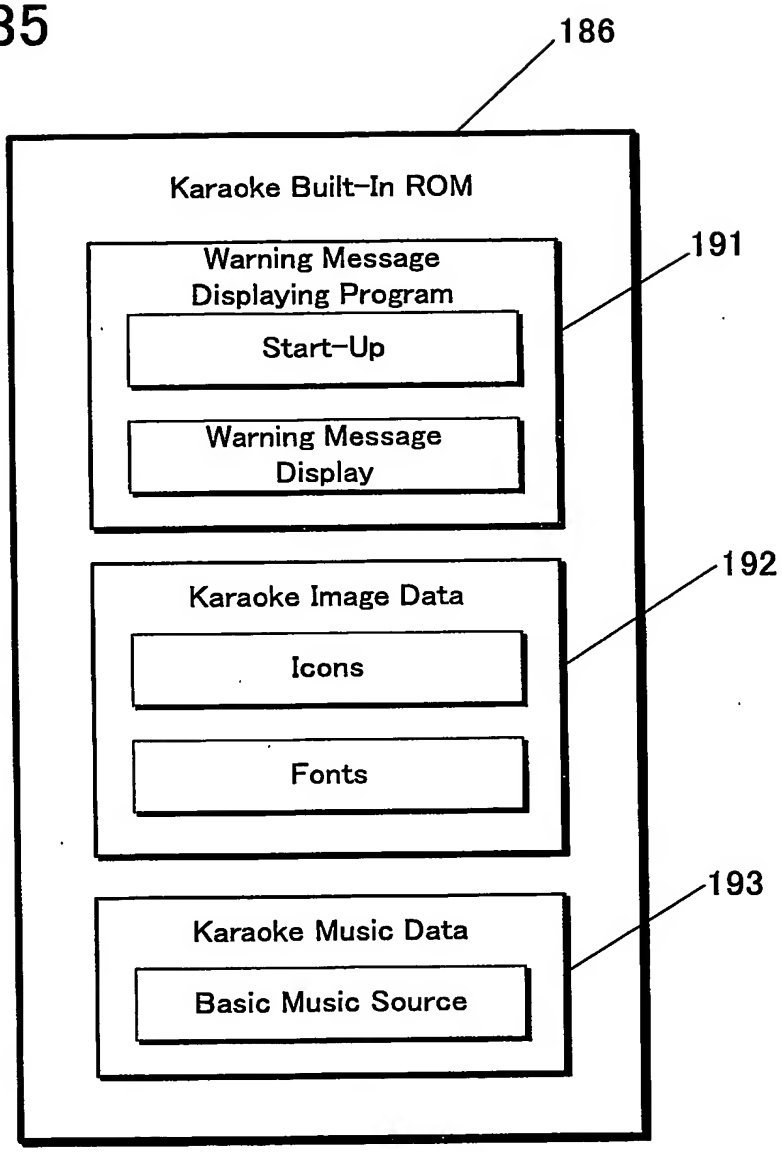

186
Karaoke Built-In ROM
Warning Message Displaying Program
Start-Up
Warning Message Display
191
Karaoke Image Data
Icons
Fonts
192
Karaoke Music Data
Basic Music Source
193

Fig. 36

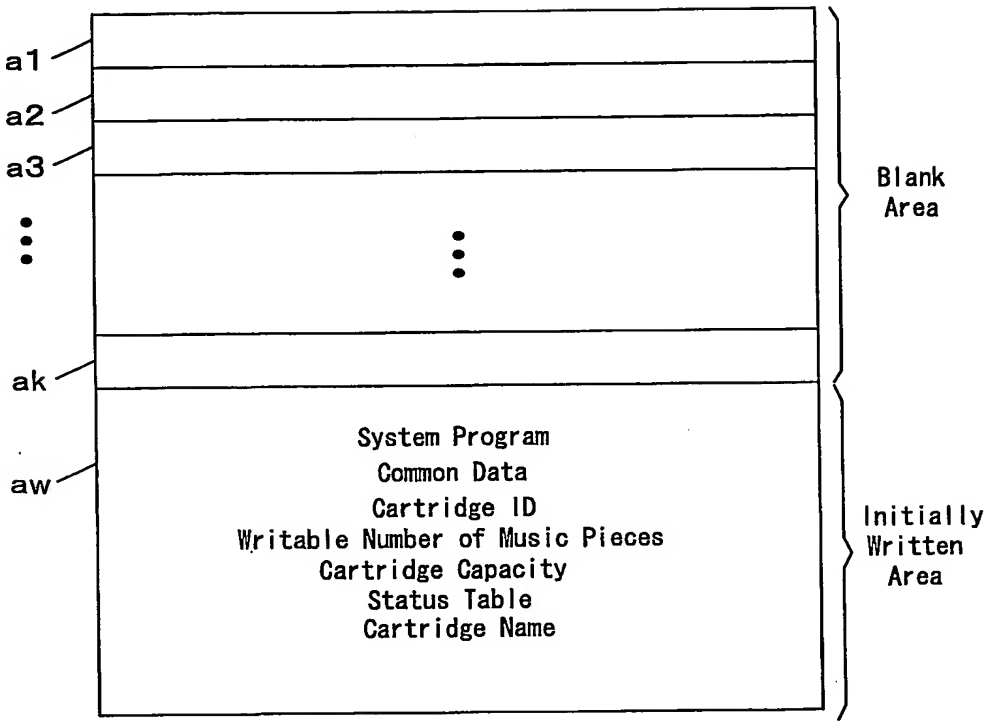

a1
a2
a3
ak
aw
System Program
Common Data
Cartridge ID
Writable Number of Music Pieces
Cartridge Capacity
Status Table
Cartridge Name
Blank Area
Initially Written Area

Fig. 37

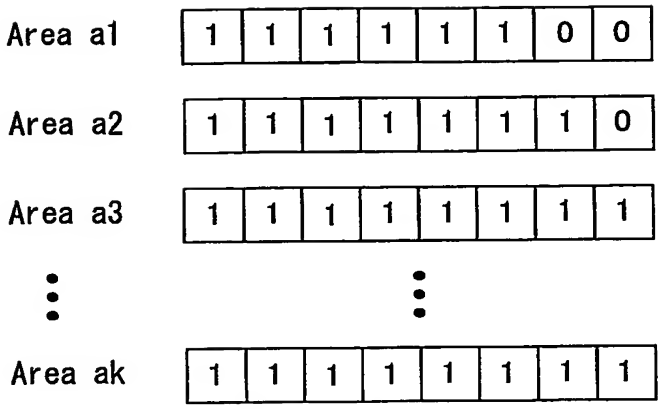

Area a1
1 1 1 1 1 1 0 0
Area a2
1 1 1 1 1 1 1 0
Area a3
1 1 1 1 1 1 1 1
Area ak
1 1 1 1 1 1 1 1

Fig. 38

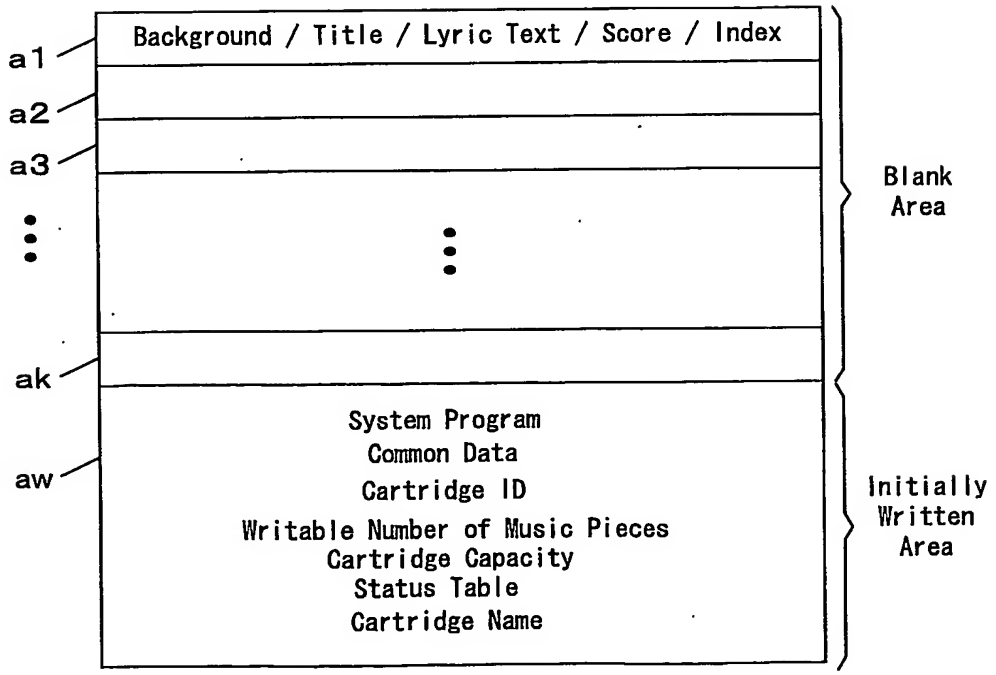

a1
a2
a3
ak
aw
Background / Title / Lyric Text / Score / Index
System Program
Common Data
Cartridge ID
Writable Number of Music Pieces
Cartridge Capacity
Status Table
Cartridge Name
Blank Area
Initially Written Area

Fig. 39

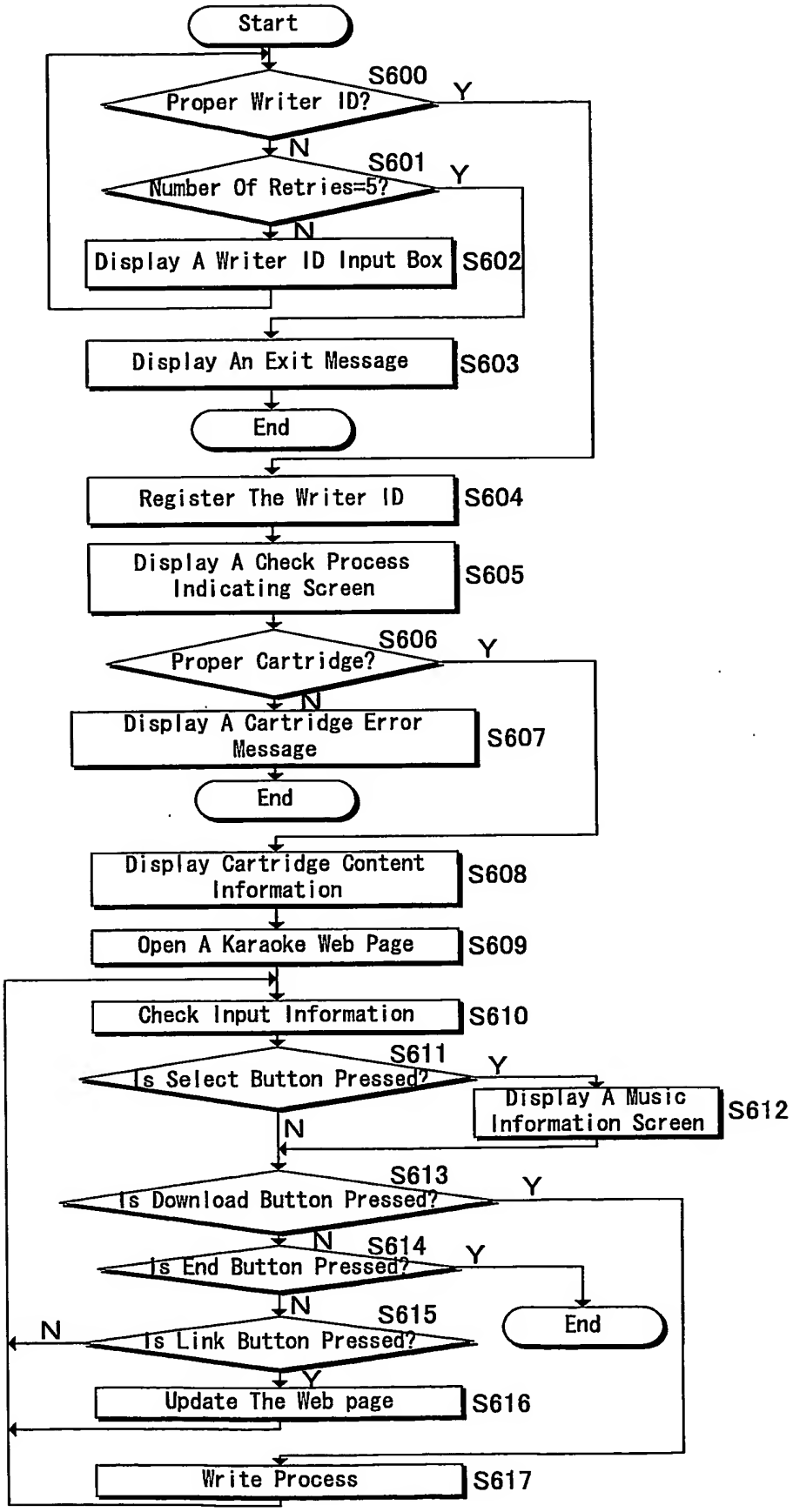

Start
S600
Proper Writer ID?
Y
N
S601
Number Of Retries=5?
Y
N
Display A Writer ID Input Box
S602
Display An Exit Message
S603
End
Register The Writer ID
S604
Display A Check Process Indicating Screen
S605
S606
Proper Cartridge?
Y
N
Display A Cartridge Error Message
S607
End
Display Cartridge Content Information
S608
Open A Karaoke Web Page
S609
Check Input Information
S610
S611
Is Select Button Pressed?
Y
Display A Music Information Screen
S612
N
S613
Is Download Button Pressed?
Y
N
S614
Is End Button Pressed?
Y
N
S615
Is Link Button Pressed?
End
N
Y
Update The Web page
S616
Write Process
S617

Fig. 40

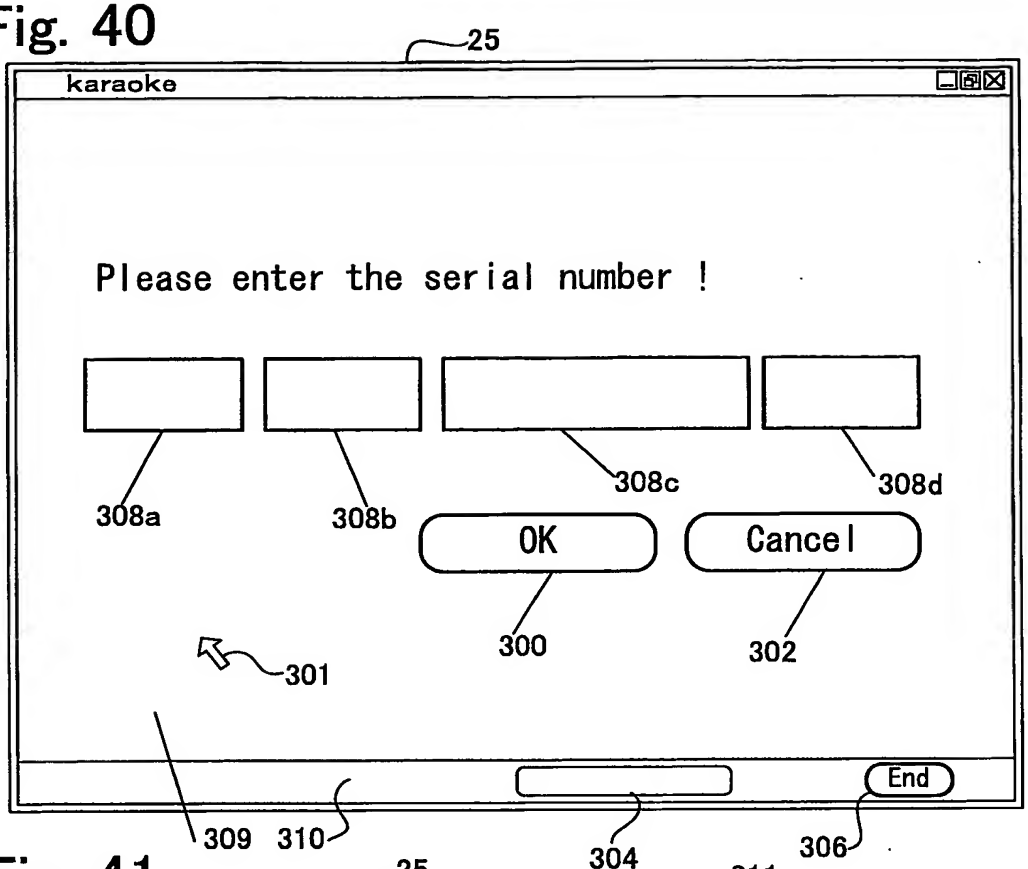

25
karaoke
Please enter the serial number !
308a
308b
308c
308d
OK
Cancel
300
302
301
309
310
304
306
End

Fig. 41

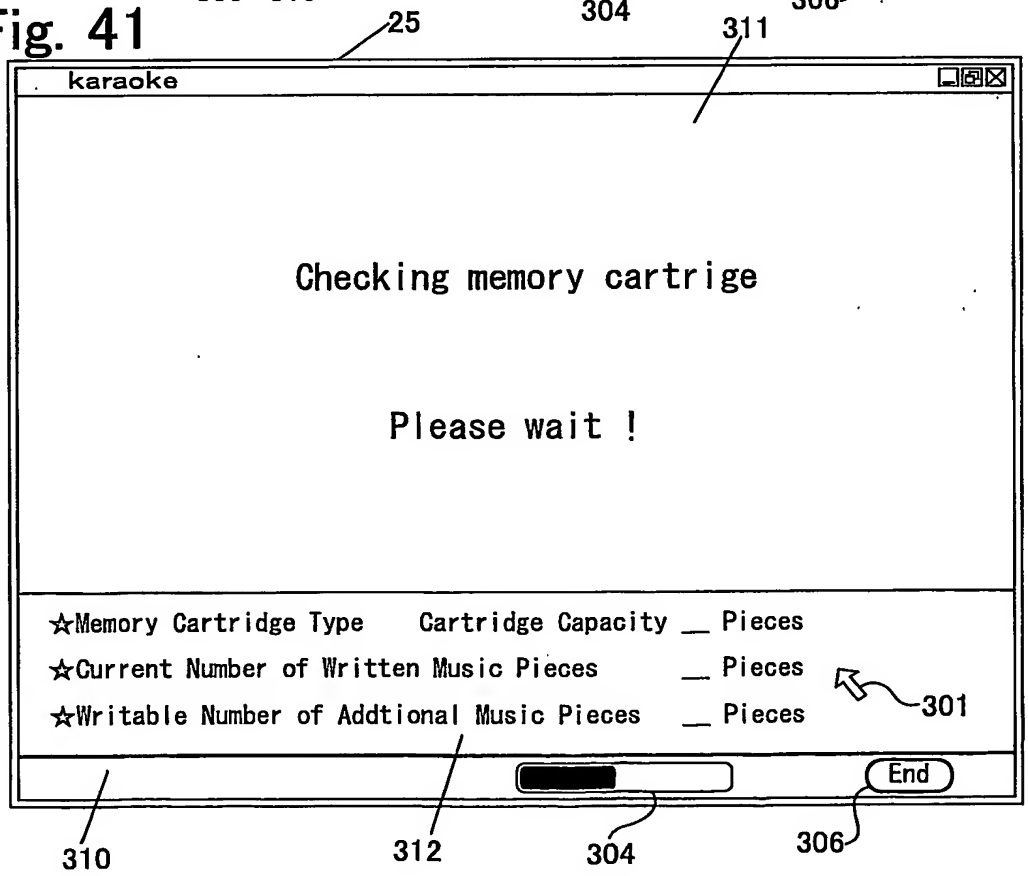

25
311
karaoke
Checking memory cartrige
Please wait !
☆Memory Cartridge Type Cartridge Capacity __ Pieces
☆Current Number of Written Music Pieces __ Pieces
☆Writable Number of Addtional Music Pieces __ Pieces
301
End
310
312
304
306

Fig. 42

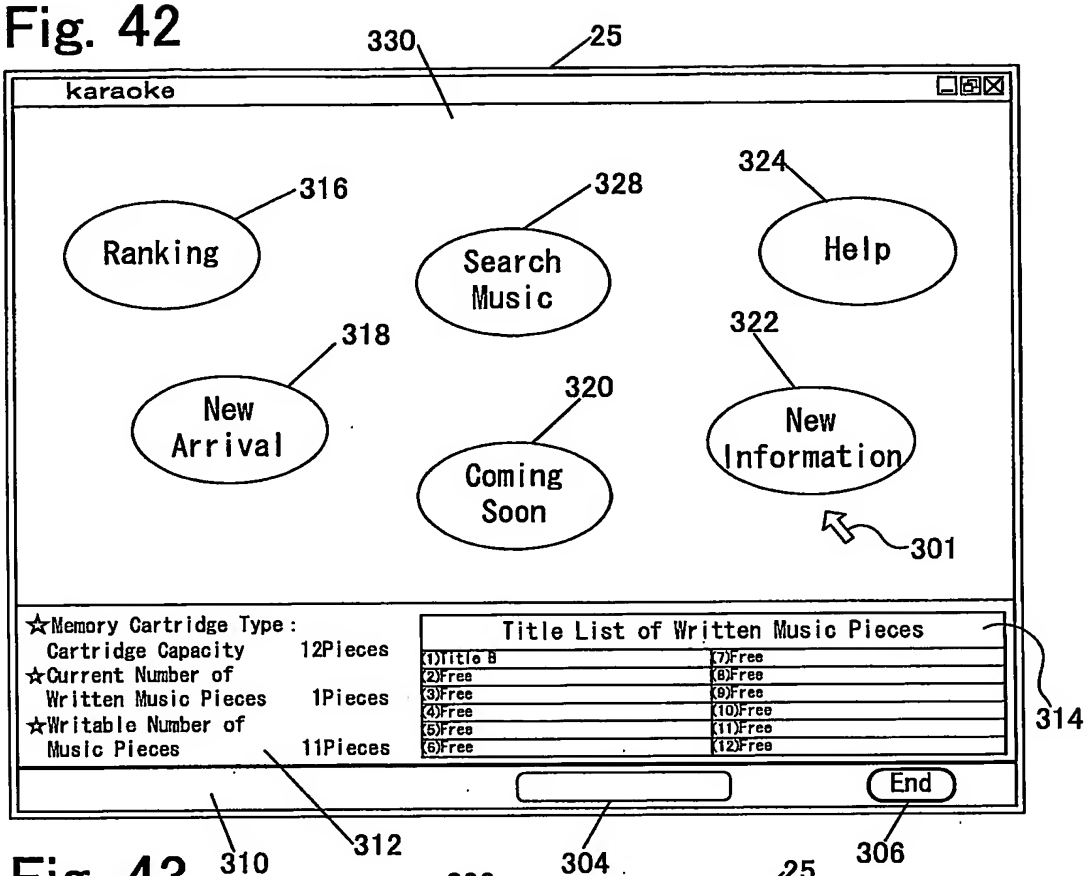

330
25
karaoke
316
Ranking
328
Search Music
324
Help
318
New Arrival
320
Coming Soon
322
New Information
301
☆Memory Cartridge Type :
Cartridge Capacity 12Pieces
☆Current Number of Written Music Pieces 1Pieces
☆Writable Number of Music Pieces 11Pieces
Title List of Written Music Pieces
(1)Title B
(2)Free
(3)Free
(4)Free
(5)Free
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
314
End
310
312
304
306

Fig. 43

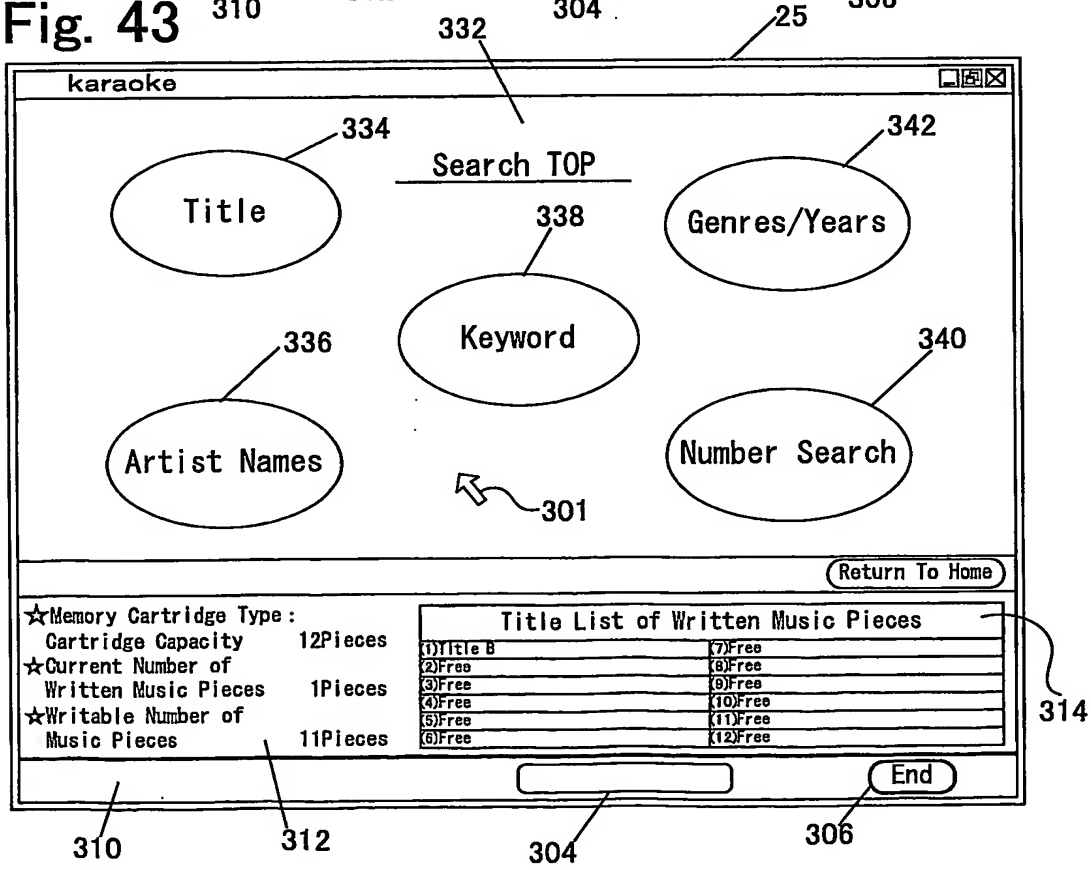

332
25
karaoke
334
Title
Search TOP
342
Genres/Years
338
Keyword
336
Artist Names
340
Number Search
301
Return To Home
☆Memory Cartridge Type :
Cartridge Capacity 12Pieces
☆Current Number of Written Music Pieces 1Pieces
☆Writable Number of Music Pieces 11Pieces
Title List of Written Music Pieces
(1)Title B
(2)Free
(3)Free
(4)Free
(5)Free
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
314
End
310
312
304
306

Fig. 44

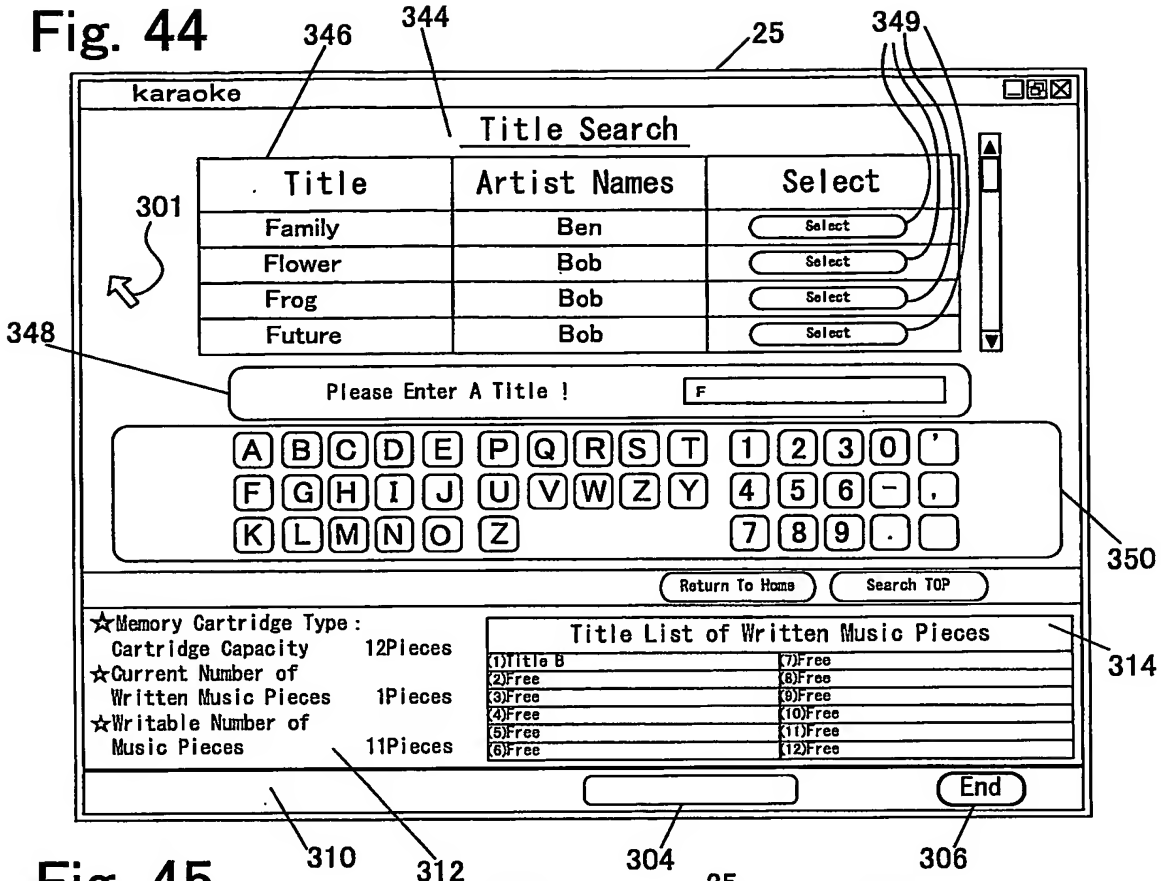

346
344
25
349
karaoke
Title Search
Title
Artist Names
Select
301
Family
Ben
Flower
Bob
Frog
Bob
Future
Bob
Select
348
Please Enter A Title !
A B C D E P Q R S T 1 2 3 0 '
F G H I J U V W Z Y 4 5 6 - ,
K L M N O Z 7 8 9 .
350
Return To Home
Search TOP
☆Memory Cartridge Type :
Cartridge Capacity 12Pieces
☆Current Number of
Written Music Pieces 1Pieces
☆Writable Number of
Music Pieces 11Pieces
Title List of Written Music Pieces
(1)Title B
(2)Free
(3)Free
(4)Free
(5)Free
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
314
End
310
312
304
306

Fig. 45

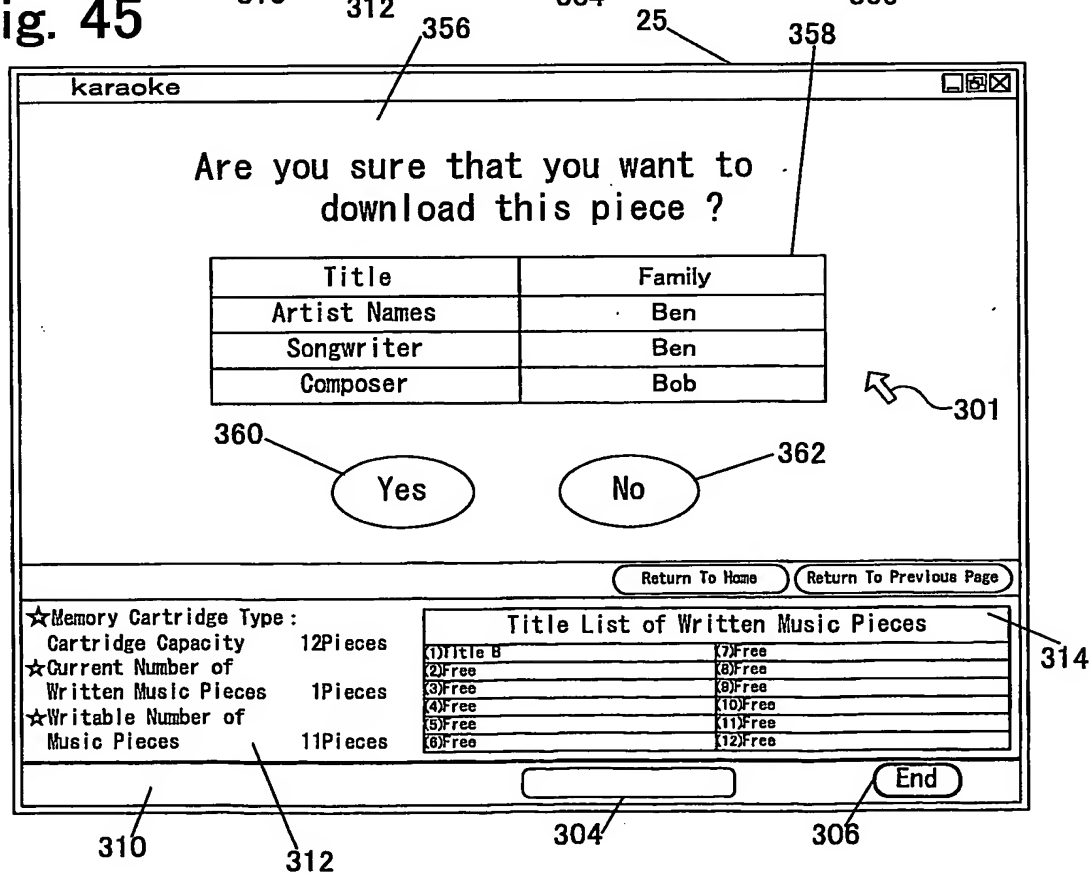

356
25
358
karaoke
Are you sure that you want to
download this piece ?
Title
Family
Artist Names
Ben
Songwriter
Ben
Composer
Bob
301
360
Yes
No
362
Return To Home
Return To Previous Page
☆Memory Cartridge Type :
Cartridge Capacity 12Pieces
☆Current Number of
Written Music Pieces 1Pieces
☆Writable Number of
Music Pieces 11Pieces
Title List of Written Music Pieces
(1)Title B
(2)Free
(3)Free
(4)Free
(5)Free
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
314
End
310
312
304
306

Fig. 46

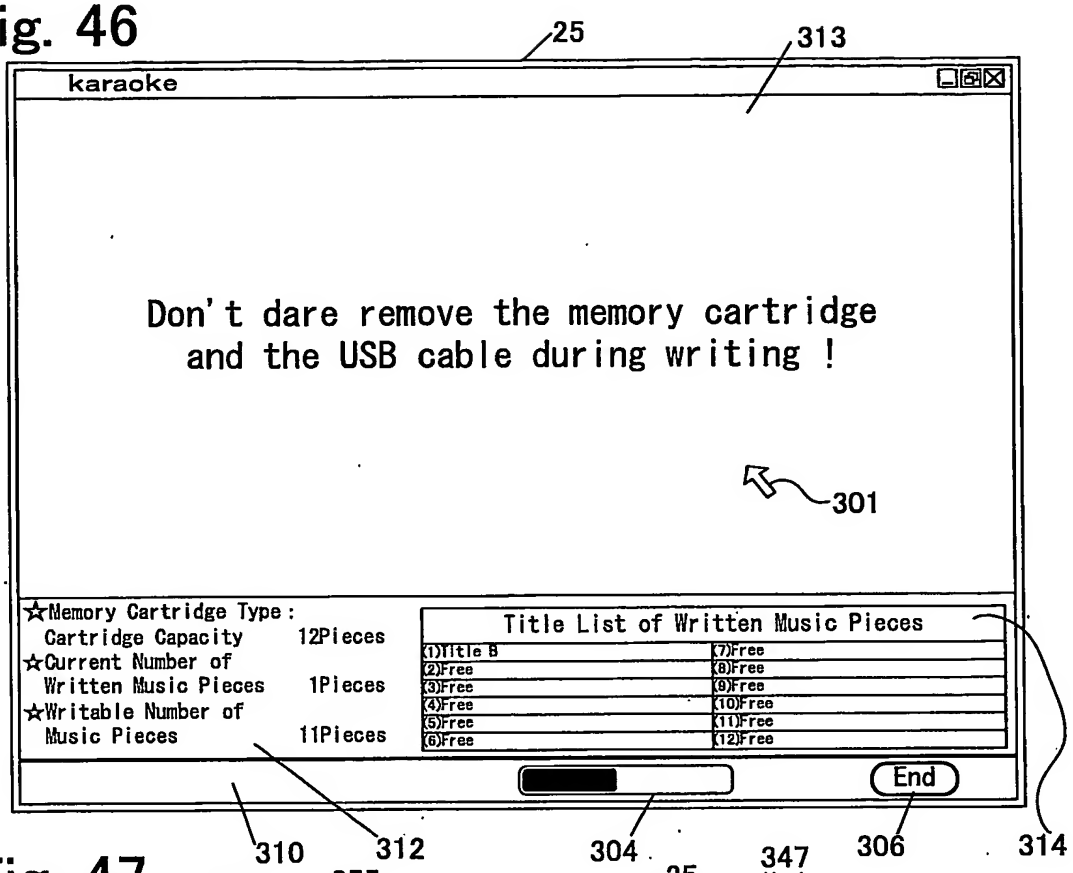

25
313
karaoke
Don't dare remove the memory cartridge
and the USB cable during writing !
301
☆Memory Cartridge Type :
Cartridge Capacity 12Pieces
☆Current Number of
Written Music Pieces 1Pieces
☆Writable Number of
Music Pieces 11Pieces
Title List of Written Music Pieces
(1)Title B
(2)Free
(3)Free
(4)Free
(5)Free
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
End
310
312
304
306
314

Fig. 47

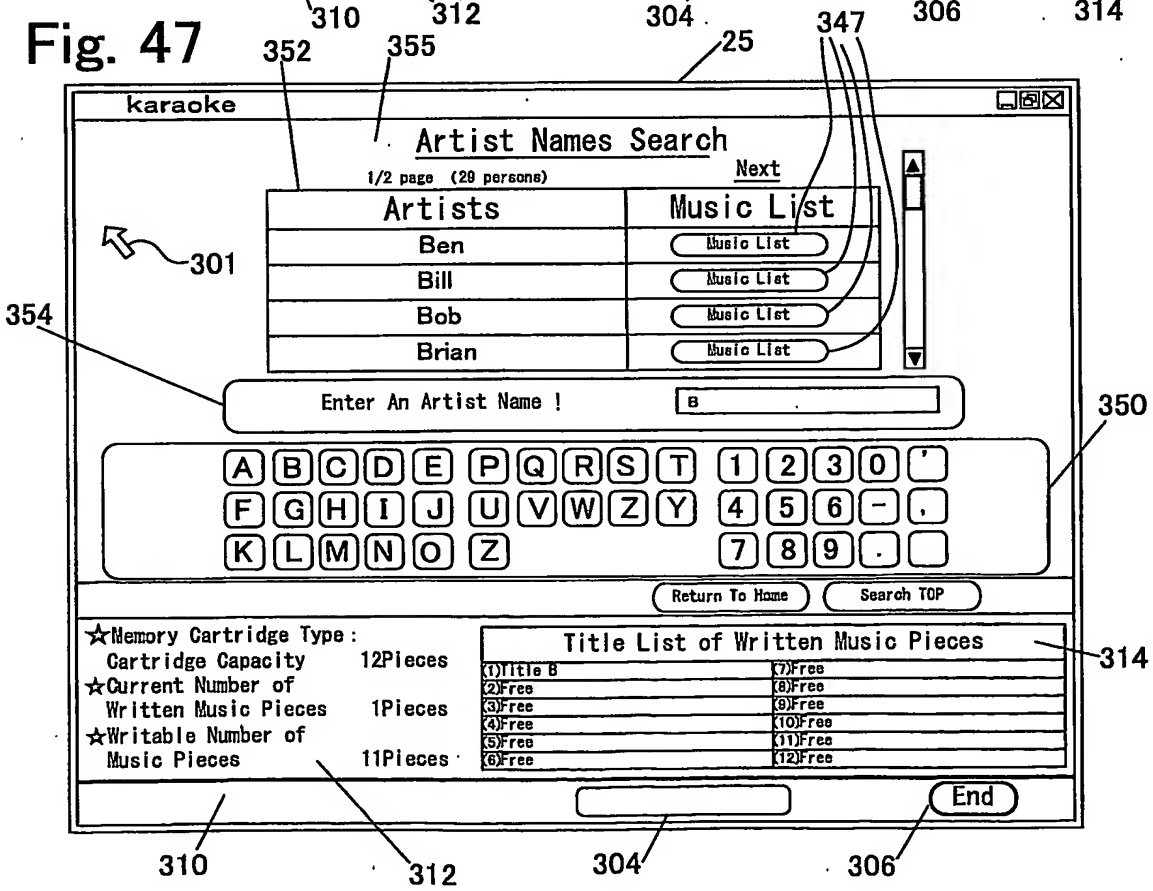

352
355
25
347
karaoke
Artist Names Search
1/2 page (29 persons)
Next
Artists
Music List
Ben
Bill
Bob
Brian
Music List
301
354
Enter An Artist Name !
B
350
A B C D E P Q R S T 1 2 3 0 '
F G H I J U V W Z Y 4 5 6 - ,
K L M N O Z 7 8 9 .
Return To Home
Search TOP
☆Memory Cartridge Type :
Cartridge Capacity 12Pieces
☆Current Number of
Written Music Pieces 1Pieces
☆Writable Number of
Music Pieces 11Pieces
Title List of Written Music Pieces
(1)Title B
(2)Free
(3)Free
(4)Free
(5)Free
(6)Free
(7)Free
(8)Free
(9)Free
(10)Free
(11)Free
(12)Free
314
End
310
312
304
306

Fig. 48

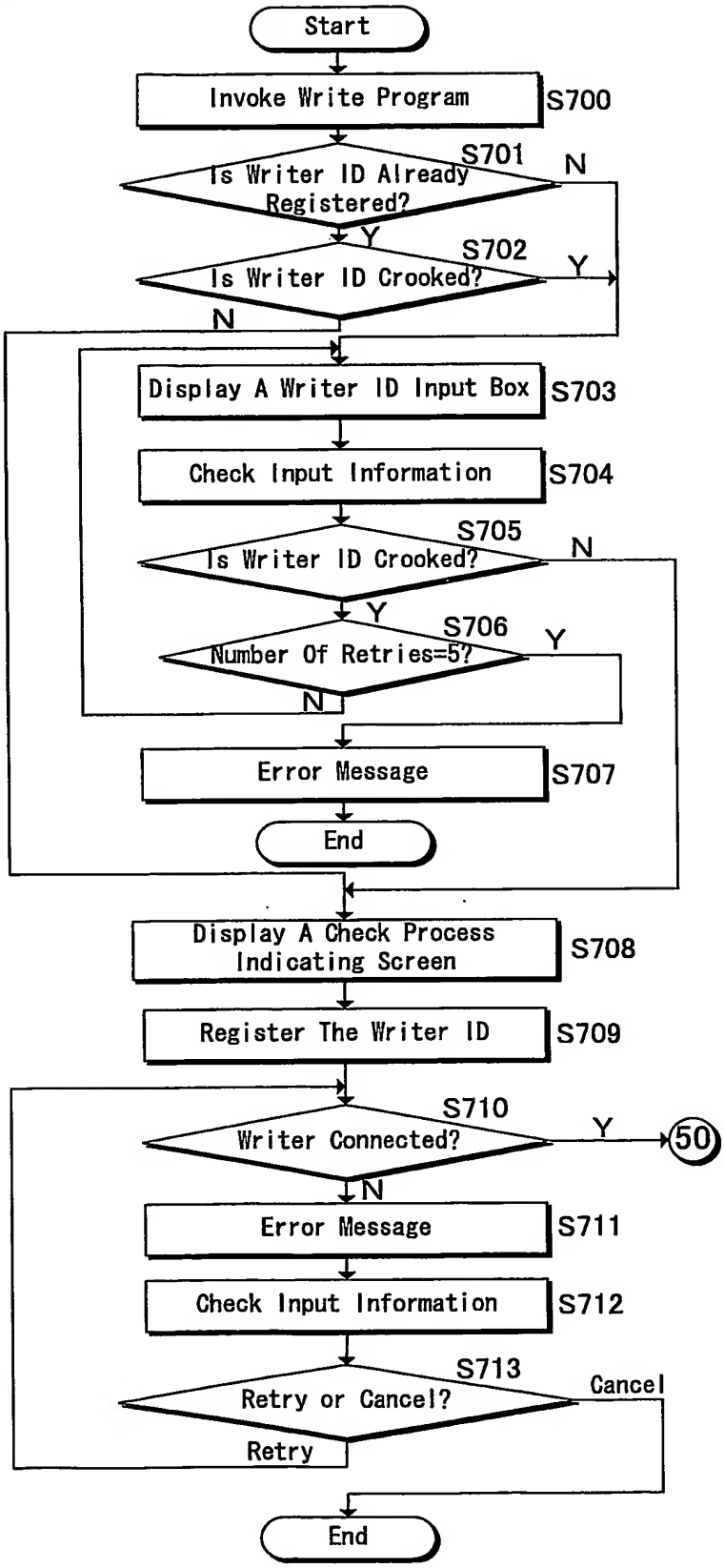

Start
Invoke Write Program
S700
S701
Is Writer ID Already Registered?
N
Y
S702
Is Writer ID Crooked?
Y
N
Display A Writer ID Input Box
S703
Check Input Information
S704
S705
Is Writer ID Crooked?
N
Y
S706
Number Of Retries=5?
Y
N
Error Message
S707
End
Display A Check Process Indicating Screen
S708
Register The Writer ID
S709
S710
Writer Connected?
Y
50
N
Error Message
S711
Check Input Information
S712
S713
Retry or Cancel?
Cancel
Retry
End

Fig. 49

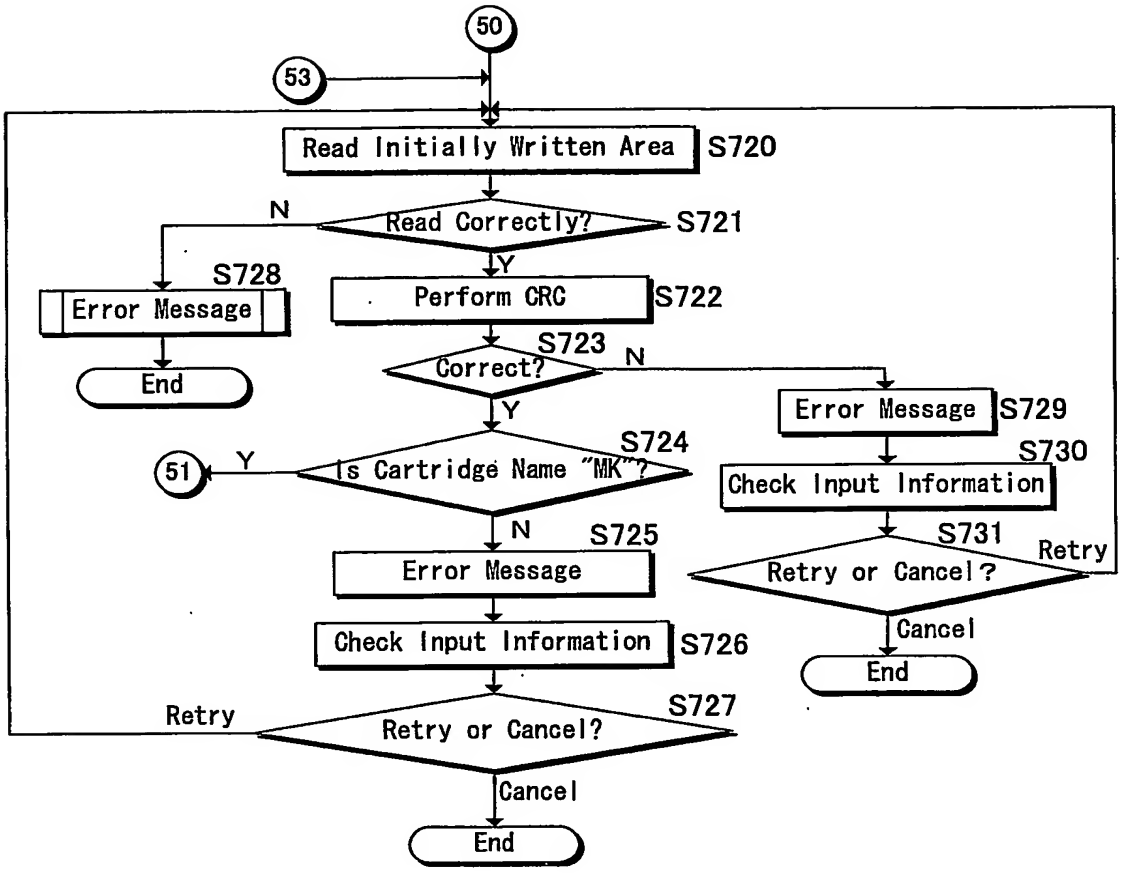

50
53
Read Initially Written Area
S720
N
Read Correctly?
S721
Y
S728
Error Message
End
Perform CRC
S722
S723
Correct?
N
Y
Error Message
S729
S730
Check Input Information
S731
Retry or Cancel?
Retry
Cancel
End
51
Y
S724
Is Cartridge Name "MK"?
N
S725
Error Message
Check Input Information
S726
S727
Retry
Retry or Cancel?
Cancel
End

Fig. 50

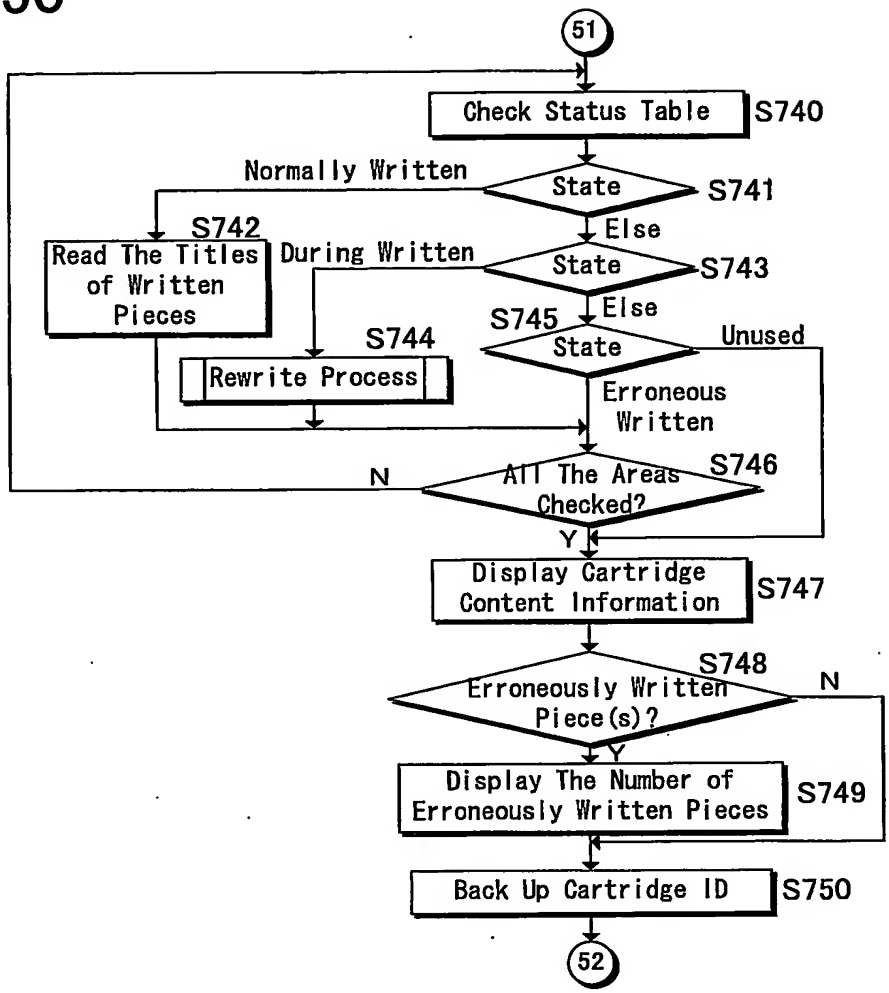

51
Check Status Table
S740
Normally Written
State
S741
S742
Read The Titles of Written Pieces
During Written
State
S743
Else
Else
S745
State
Unused
S744
Rewrite Process
Erroneous Written
N
All The Areas Checked?
S746
Y
Display Cartridge Content Information
S747
S748
Erroneously Written Piece(s)?
N
Y
Display The Number of Erroneously Written Pieces
S749
Back Up Cartridge ID
S750
52

Fig. 51

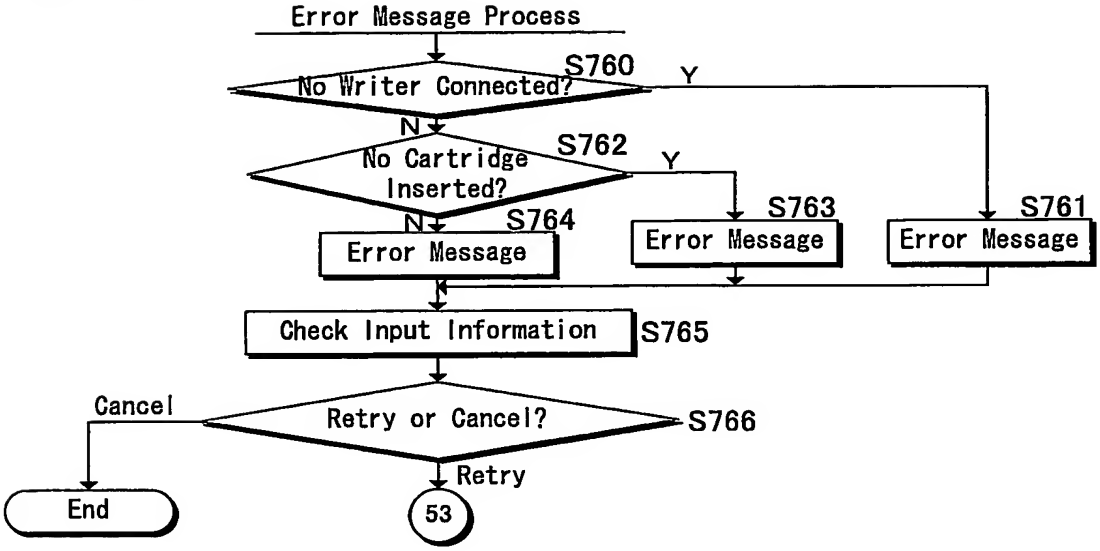

Error Message Process
No Writer Connected?
S760
Y
N
No Cartridge Inserted?
S762
Y
N
S764
Error Message
S763
Error Message
S761
Error Message
Check Input Information
S765
Cancel
Retry or Cancel?
S766
Retry
End
53

Fig. 52

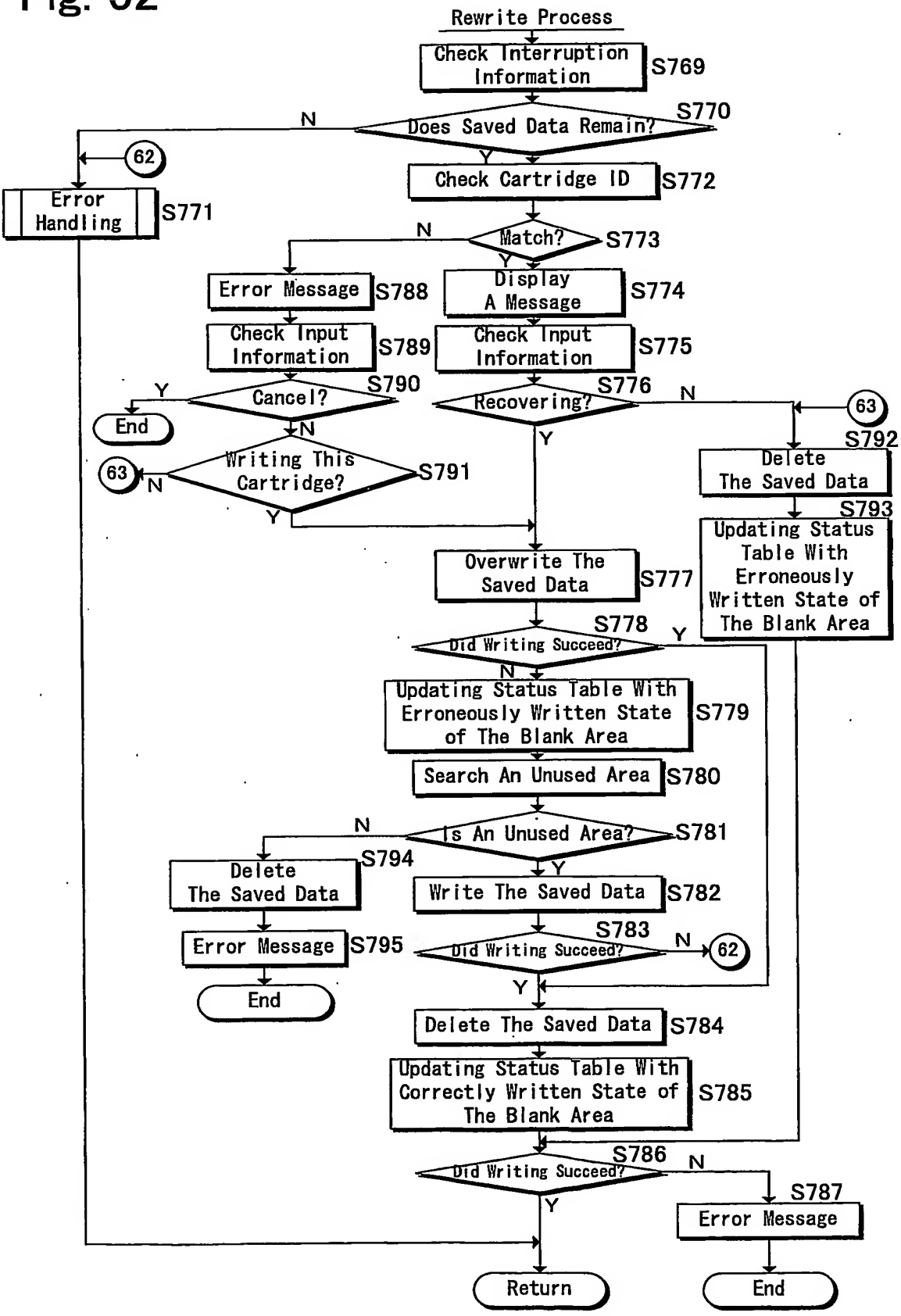

Rewrite Process
Check Interruption Information
S769
Does Saved Data Remain?
S770
N
Y
62
Error Handling
S771
Check Cartridge ID
S772
Match?
S773
N
Y
Error Message
S788
Display A Message
S774
Check Input Information
S789
Check Input Information
S775
Cancel?
S790
Y
N
End
Recovering?
S776
N
Y
63
Writing This Cartridge?
S791
63
N
Y
Delete The Saved Data
S792
Updating Status Table With Erroneously Written State of The Blank Area
S793
Overwrite The Saved Data
S777
Did Writing Succeed?
S778
Y
N
Updating Status Table With Erroneously Written State of The Blank Area
S779
Search An Unused Area
S780
Is An Unused Area?
S781
N
Y
Delete The Saved Data
S794
Write The Saved Data
S782
Error Message
S795
Did Writing Succeed?
S783
N
62
End
Y
Delete The Saved Data
S784
Updating Status Table With Correctly Written State of The Blank Area
S785
Did Writing Succeed?
S786
N
Y
Error Message
S787
Return
End

Fig. 53

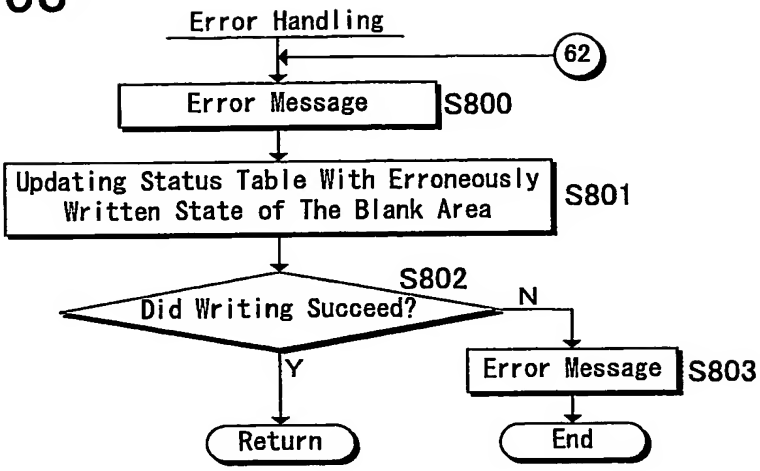

Error Handling
62
Error Message
S800
Updating Status Table With Erroneously Written State of The Blank Area
S801
S802
Did Writing Succeed?
N
Y
Error Message
S803
Return
End

Fig. 54

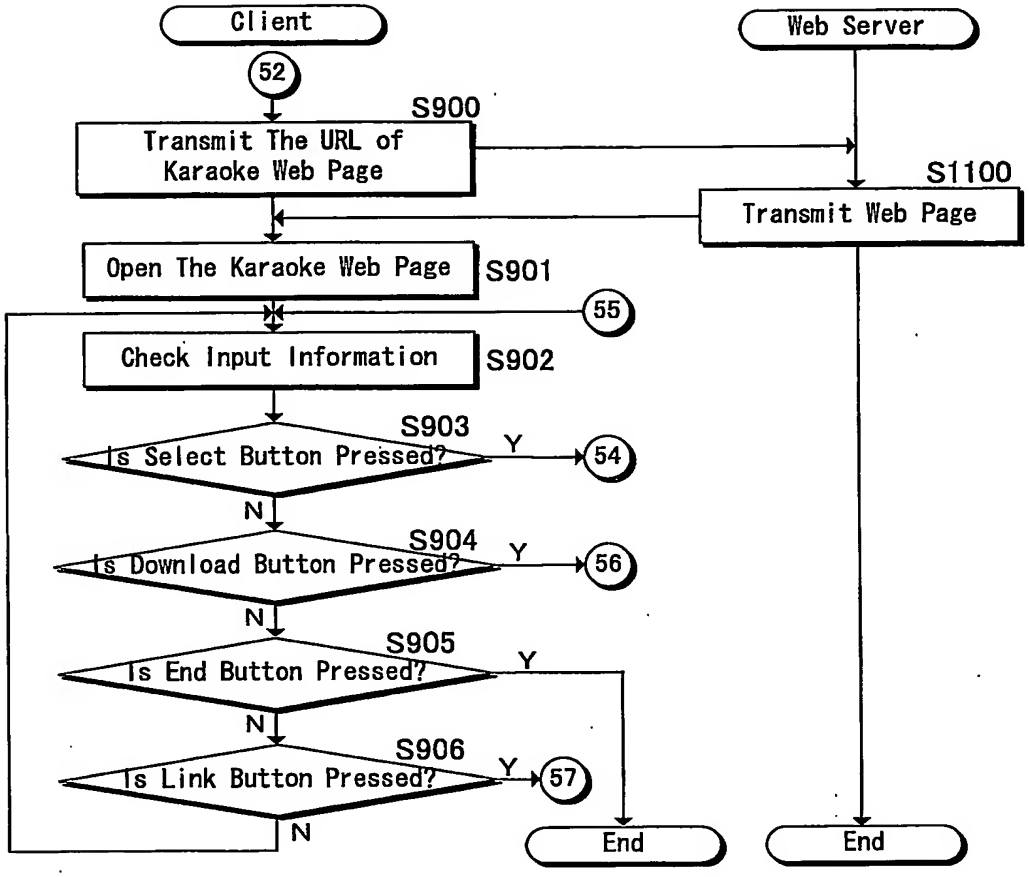

Client
Web Server
52
S900
Transmit The URL of Karaoke Web Page
S1100
Transmit Web Page
Open The Karaoke Web Page
S901
55
Check Input Information
S902
S903
Is Select Button Pressed?
Y
54
N
S904
Is Download Button Pressed?
Y
56
N
S905
Is End Button Pressed?
Y
N
S906
Is Link Button Pressed?
Y
57
N
End
End

Fig. 55

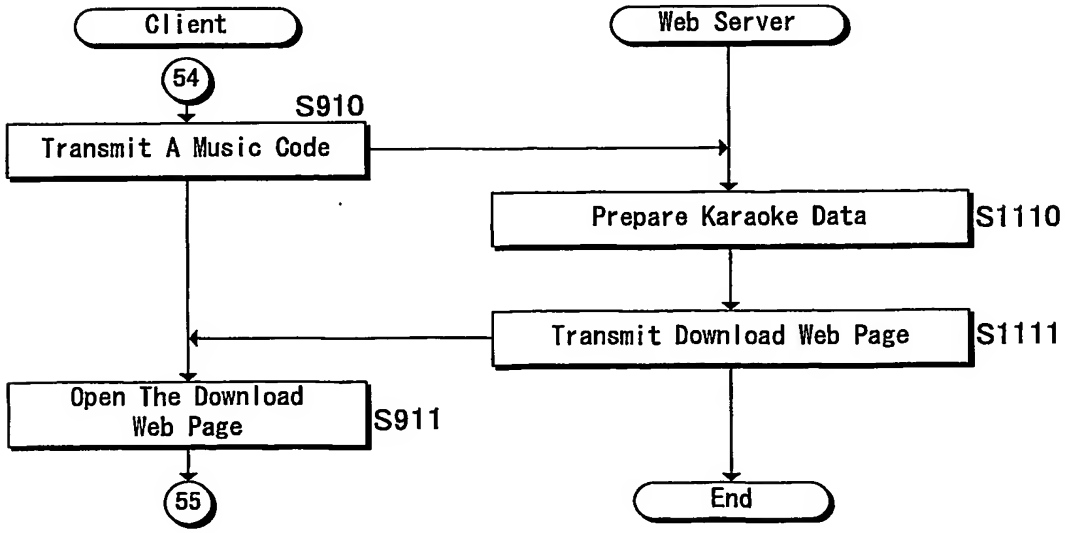

Client
Web Server
54
S910
Transmit A Music Code
Prepare Karaoke Data
S1110
Transmit Download Web Page
S1111
Open The Download Web Page
S911
55
End

Fig. 56

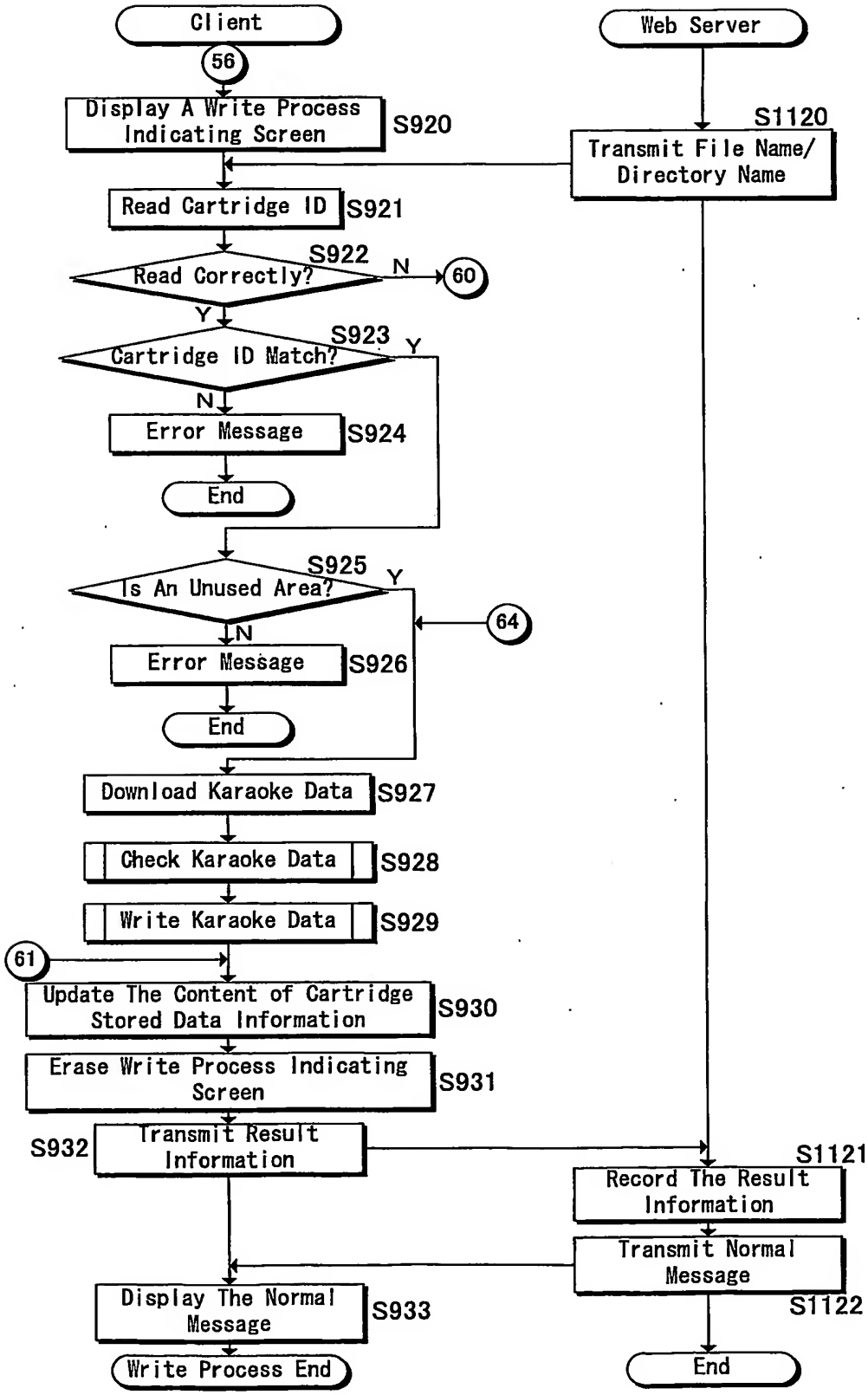

Client
Web Server
56
Display A Write Process Indicating Screen
S920
S1120
Transmit File Name/ Directory Name
Read Cartridge ID
S921
S922
Read Correctly?
N
60
Y
S923
Cartridge ID Match?
Y
N
Error Message
S924
End
S925
Is An Unused Area?
Y
64
N
Error Message
S926
End
Download Karaoke Data
S927
Check Karaoke Data
S928
Write Karaoke Data
S929
61
Update The Content of Cartridge Stored Data Information
S930
Erase Write Process Indicating Screen
S931
S932
Transmit Result Information
S1121
Record The Result Information
Transmit Normal Message
S1122
Display The Normal Message
S933
Write Process End
End

Fig. 57

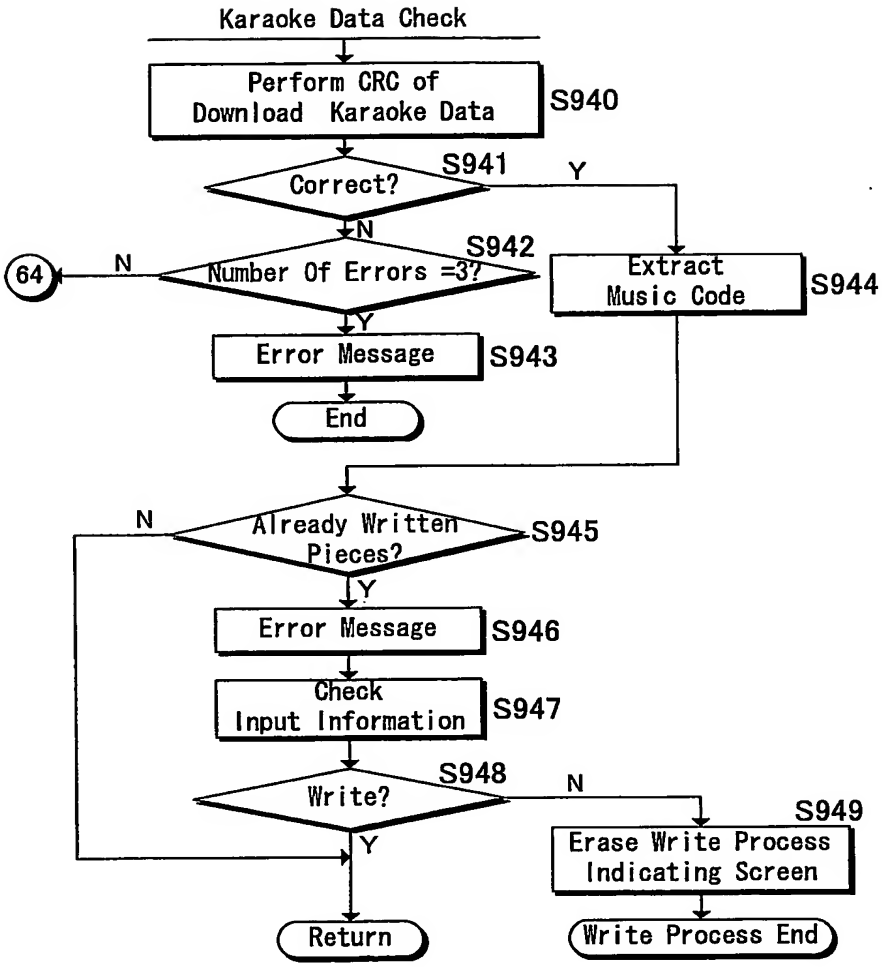

Karaoke Data Check
Perform CRC of Download Karaoke Data
S940
Correct?
S941
Y
N
Number Of Errors =3?
S942
N
64
Y
Extract Music Code
S944
Error Message
S943
End
Already Written Pieces?
S945
N
Y
Error Message
S946
Check Input Information
S947
Write?
S948
N
Y
S949
Erase Write Process Indicating Screen
Return
Write Process End

Fig. 58

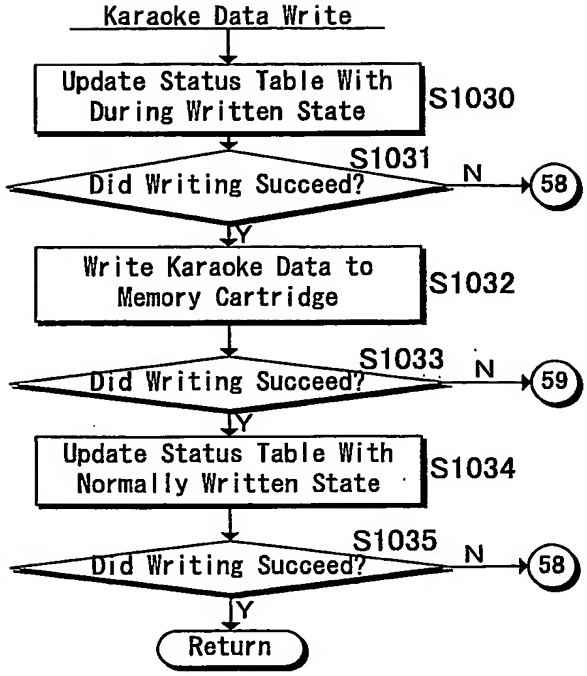

Karaoke Data Write
Update Status Table With During Written State
S1030
S1031
Did Writing Succeed?
N
58
Y
Write Karaoke Data to Memory Cartridge
S1032
S1033
Did Writing Succeed?
N
59
Y
Update Status Table With Normally Written State
S1034
S1035
Did Writing Succeed?
N
58
Y
Return

Fig. 59

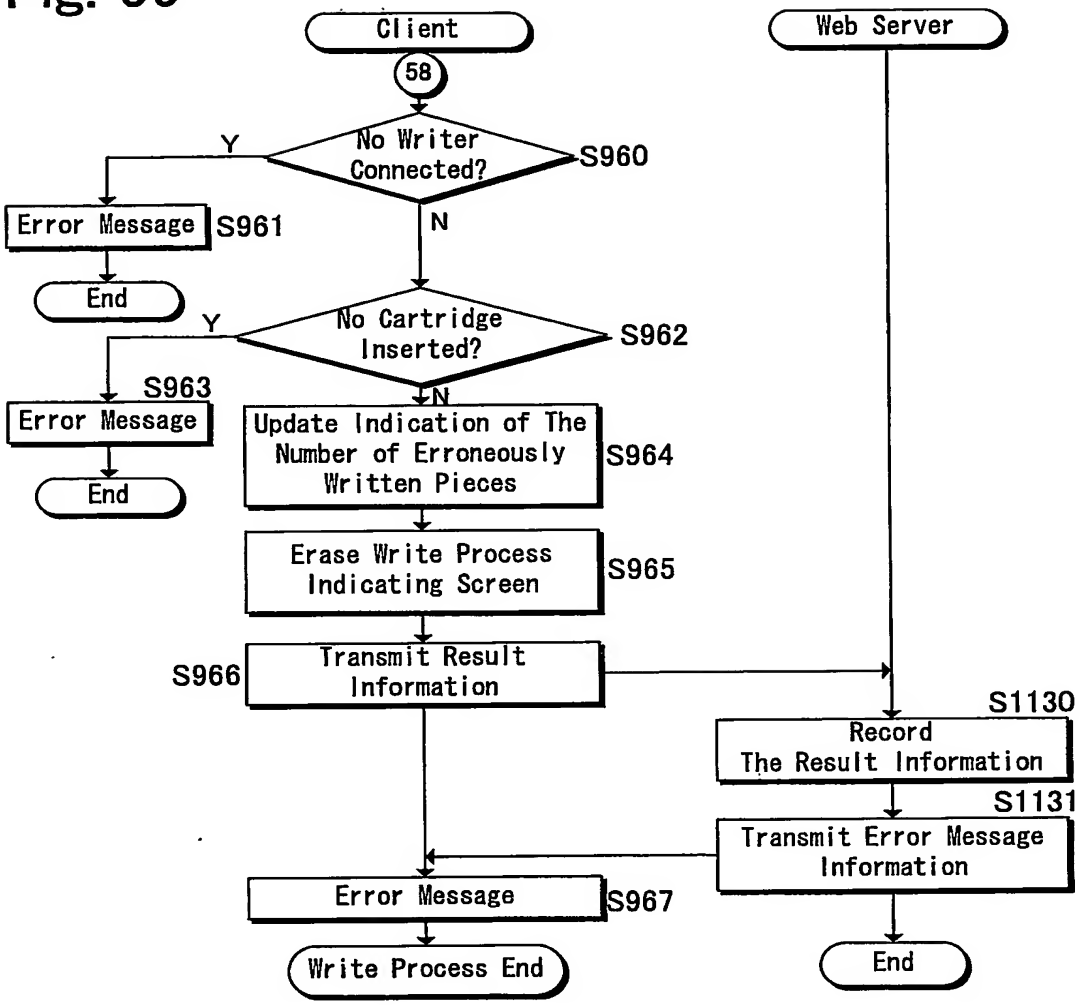

Client
Web Server
58
No Writer Connected?
S960
Y
N
Error Message
S961
End
No Cartridge Inserted?
S962
Y
N
S963
Error Message
End
Update Indication of The Number of Erroneously Written Pieces
S964
Erase Write Process Indicating Screen
S965
S966
Transmit Result Information
S1130
Record The Result Information
S1131
Transmit Error Message Information
Error Message
S967
Write Process End
End

Fig. 60

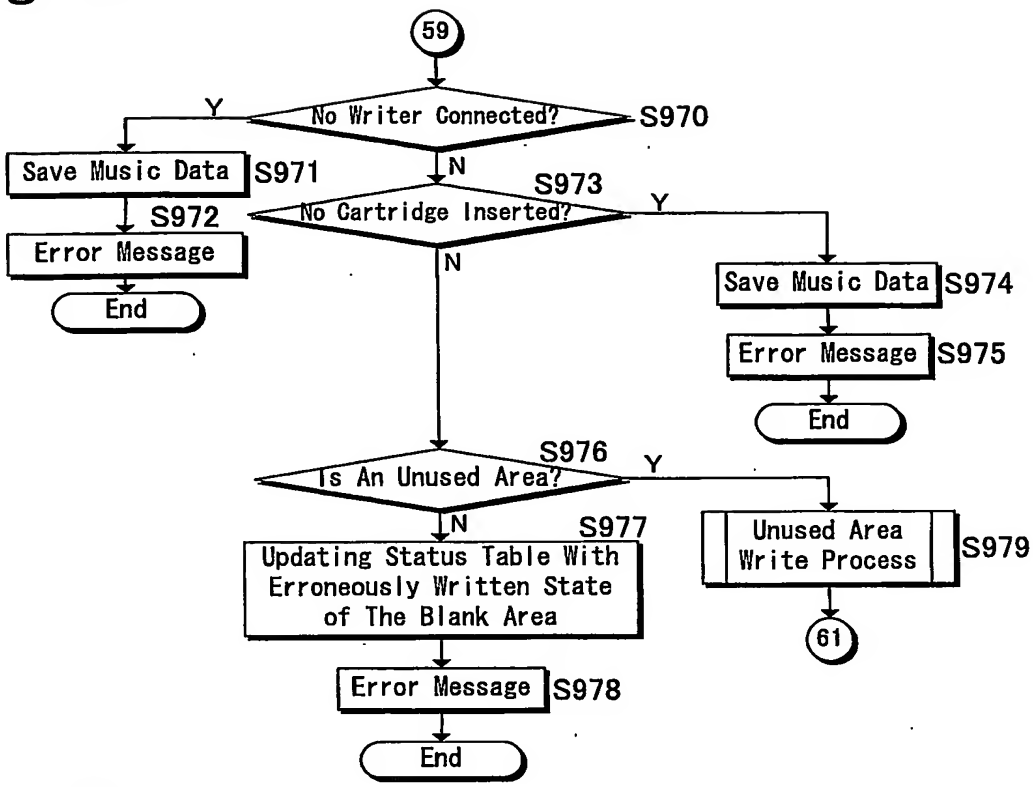

59
No Writer Connected?
S970
Y
N
Save Music Data
S971
S972
Error Message
End
S973
No Cartridge Inserted?
Y
N
Save Music Data
S974
Error Message
S975
End
S976
Is An Unused Area?
Y
N
S977
Updating Status Table With Erroneously Written State of The Blank Area
Error Message
S978
End
Unused Area Write Process
S979
61

Fig. 61

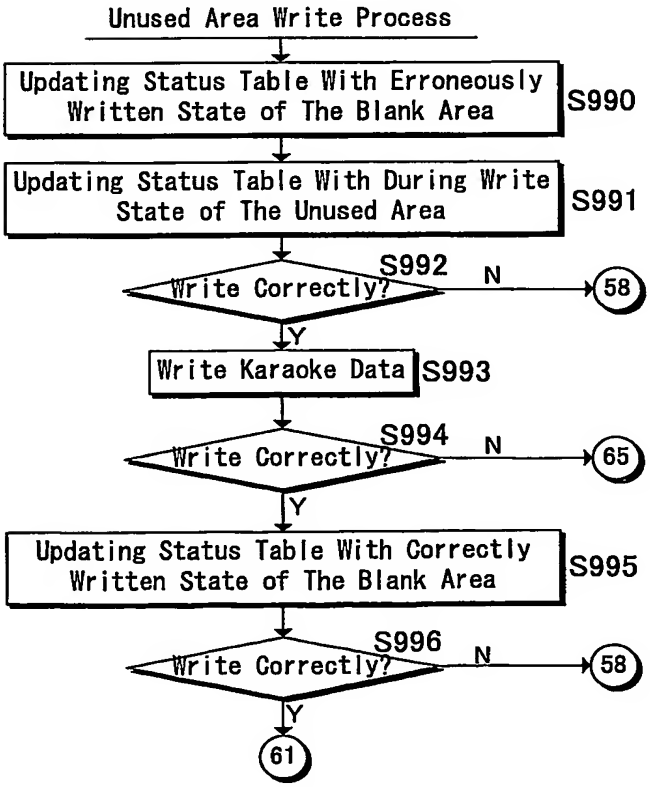

Unused Area Write Process
Updating Status Table With Erroneously Written State of The Blank Area
S990
Updating Status Table With During Write State of The Unused Area
S991
S992
Write Correctly?
N
58
Y
Write Karaoke Data
S993
S994
Write Correctly?
N
65
Y
Updating Status Table With Correctly Written State of The Blank Area
S995
S996
Write Correctly?
N
58
Y
61

Fig. 62

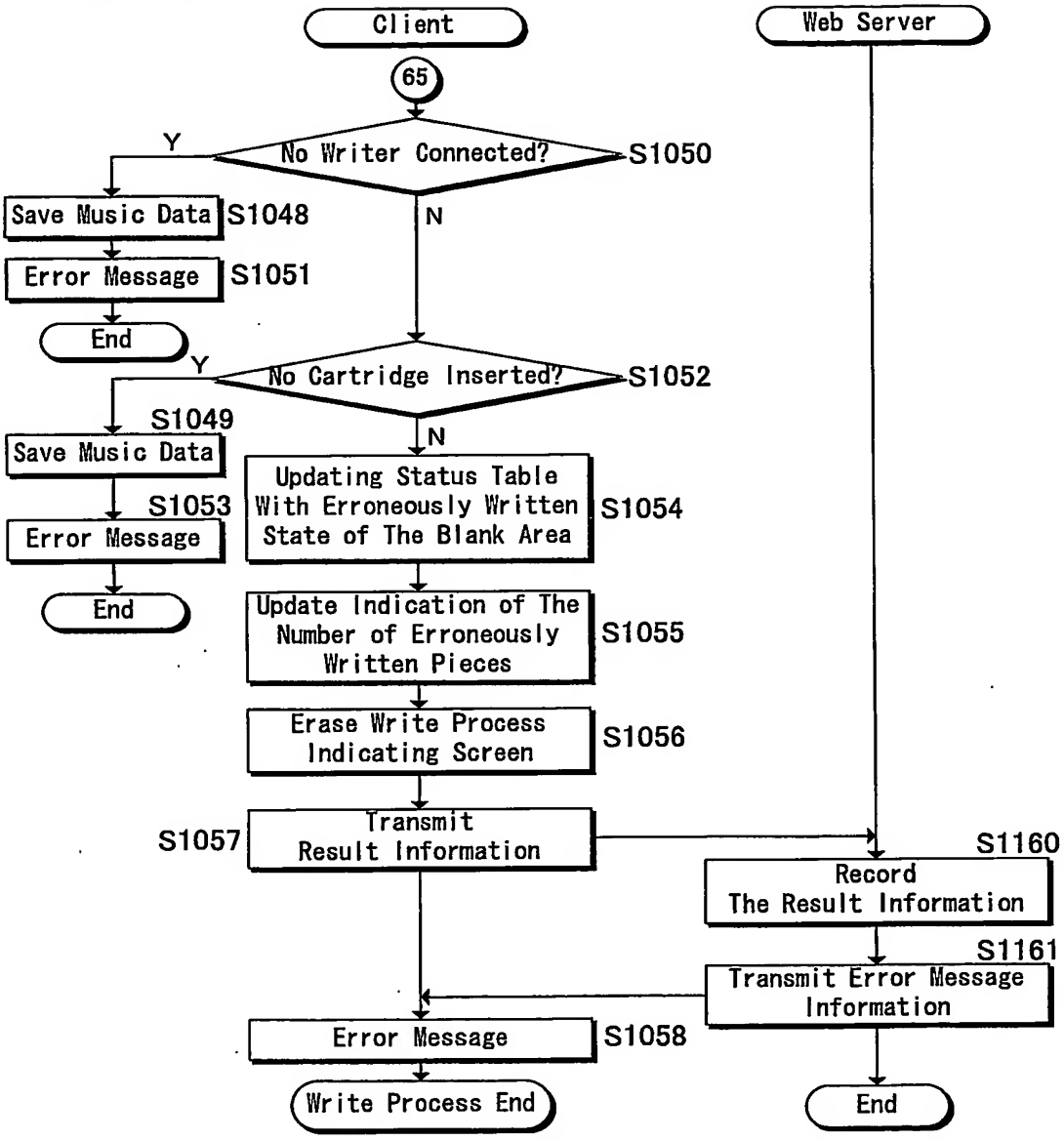

Client
Web Server
65
No Writer Connected?
S1050
Y
N
Save Music Data
S1048
Error Message
S1051
End
No Cartridge Inserted?
S1052
Y
N
S1049
Save Music Data
S1053
Error Message
End
Updating Status Table With Erroneously Written State of The Blank Area
S1054
Update Indication of The Number of Erroneously Written Pieces
S1055
Erase Write Process Indicating Screen
S1056
S1057
Transmit Result Information
S1160
Record The Result Information
S1161
Transmit Error Message Information
Error Message
S1058
Write Process End
End

Fig. 63

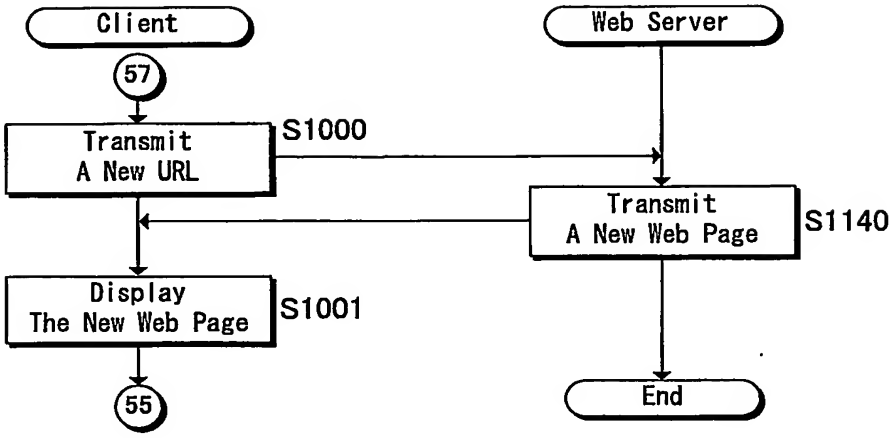
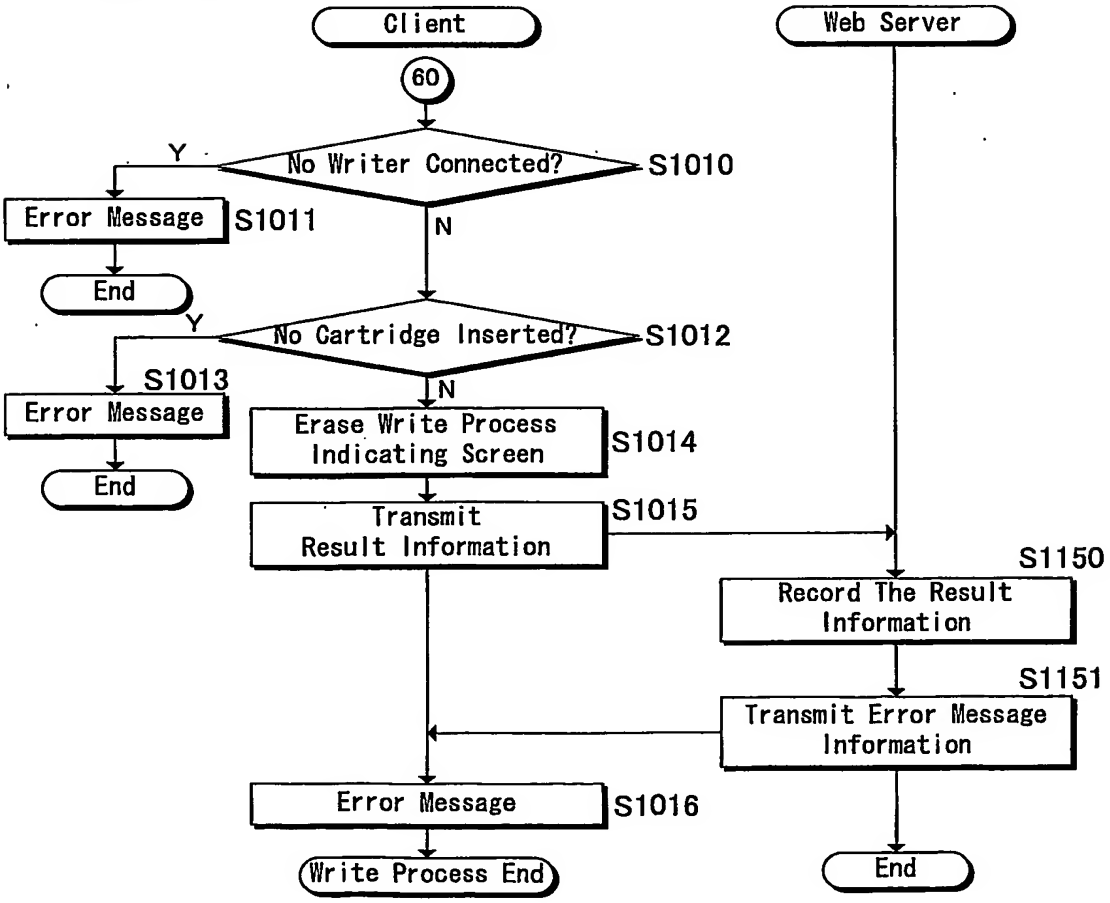

Client
Web Server
57
Transmit
A New URL
S1000
Transmit
A New Web Page
S1140
Display
The New Web Page
S1001
55
End

Fig. 64


Client
Web Server
60
Y
No Writer Connected?
S1010
Error Message
S1011
N
End
Y
No Cartridge Inserted?
S1012
S1013
Error Message
N
Erase Write Process
Indicating Screen
S1014
End
Transmit
Result Information
S1015
S1150
Record The Result
Information
S1151
Transmit Error Message
Information
Error Message
S1016
Write Process End
End